

# Curriculum Vitae

October 2023

## Personal Information

|                     |                                                                                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------|
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## Research Summary

My research interests primarily focus on robotics, computer vision for robotics, Micro Air Vehicles (MAVs), and intelligent unmanned systems. As the head of the intelligent Unmanned Aerial Systems (iUAS) group at INAOE, I have led research efforts that have resulted in the development of novel methods for autonomous Unmanned Aerial Vehicles (UAVs) or drones, specifically in GPS-denied environments. Our work includes exploring various approaches to enable UAVs to perceive their environment, ranging from visual to auditory perception. We have also researched aerial interaction via a robotic arm and object lifting with a suspended cable.

I am honoured to have received the highly prestigious Newton Advanced Fellowship and been a Research Fellow of the Royal Society in the UK. Additionally, I hold an Honorary Senior Research Fellowship in the Computer Science Department at the University of Bristol. I am Senior Member of the IEEE, and member of the National System of Researchers in Mexico, Level 2 for the period 2024-2028.

My team, QuetzalC++, has achieved outstanding performance in various international competitions related to aerial robotics. Notably, we were the first Mexican team to win an autonomous drone competition by achieving 1st Place in the IEEE IROS 2017 Autonomous Drone Racing competition. We also won 2nd Place in the IMAV 2016 and the Best Performance Award in the IMAV 2019. QuetzalC++ ranked 3rd Place in the Game of Drones competition Tier 1 of NeurIPS 2019, organized by Microsoft and Stanford University, and 1st Place in the Regional Prize (Latin America) of the OpenCV AI Competition, with a 5,000 USD cash prize, sponsored by Microsoft Azure and Intel.

In 2021, I had the privilege of serving as the General Chair of the International Micro Air Vehicle Conference and Competition (IMAV) 2021, held in Puebla, Mexico, in November of that year. I have also been invited to serve as member of the Editorial Board of the Unmanned Systems Journal, Guest Editor for the International Journal of Micro Air Vehicles, and Associate Editor for the IEEE IROS conference in 2022 and 2023.

# Content

|                                          |           |
|------------------------------------------|-----------|
| <b>Education &amp; Work Experience</b>   | <b>3</b>  |
| <b>Awards &amp; Achievements</b>         | <b>5</b>  |
| <b>Publications</b>                      | <b>9</b>  |
| <b>Projects</b>                          | <b>22</b> |
| <b>Patents &amp; Copyrights</b>          | <b>24</b> |
| <b>Invited Talks</b>                     | <b>25</b> |
| <b>Students &amp; Staff</b>              | <b>33</b> |
| <b>Lecturing</b>                         | <b>38</b> |
| <b>Editorial &amp; Review Activities</b> | <b>41</b> |
| <b>Event Organiser</b>                   | <b>46</b> |
| <b>Others</b>                            | <b>46</b> |

# Education & Work Experience

## Education

1. **PhD in Computer Science, 2012**  
University of Bristol. Faculty of Engineering. Bristol, UK.  
Thesis: *Efficient Monocular SLAM by Using a Structure-Driven Mapping*
2. **Master in Computer Science, 2007 (Best Student)**  
Instituto Nacional de Astrofísica Óptica y Electrónica.  
Computer Science Department. Puebla, Mexico.  
Thesis: *Object Tracking by using a new foveal vision approach*
3. **BSc. in Computer Science. 2004. (Highest Honours: Cum Laude)**  
Benemérita Universidad Autónoma de Puebla. Puebla, México.  
Thesis: *System for the Visualisation of Digital Medical Images*

## Languages

1. Spanish (Native Speaker)
2. English (Full Professional Proficiency/Lived in the UK for 7 years)
3. German (Beginner)

## Faculty Positions

1. **Full-Time Principal Researcher B (Associated Professor)**  
Computer Science Department  
Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE)  
(Tenured awarded 2023)  
August, 2020 - **[present]**
2. **Full-Time Principal Researcher A (Associate Professor)**  
Computer Science Department  
Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE)  
August, 2017 - July, 2020
3. **Full-Time Associate Researcher C (Assistant Professor)**  
Computer Science Department  
Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE)  
November, 2014 – July, 2017

## Work Experience

1. **Postdoctoral Research Associate**  
Computer Science Department  
University of Bristol  
April, 2014 - October, 2014
2. **Postdoctoral Research Assistant**

- Computer Science Department  
University of Bristol  
August, 2012 - March, 2014
3. **Software Consultant** for the University West of England (UWE)  
University of Bristol  
May-July, 2012
  4. **Research Assistant**  
Computer Science Department  
University of Bristol  
Funded by SAMSUNG Electronics.  
May, 2011 - April, 2012
  5. **Teaching Assistant**  
Computer Science Department  
University of Bristol  
Spring and Winter term 2008, Winter term 2011
  6. **Lead Software Developer**  
Computer Vision Laboratory  
Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE)  
Participation in the following projects:
    - Vision System to measure the behaviour of the Mexican fruit fly
    - Optoelectronic Fire Director System - Garfio 2.0.April, 2006 – July, 2007

## Research Visits

1. **University of Bristol.** Faculty of Engineering, with *Dr. Andrew Calway*. October 6<sup>th</sup> – 15<sup>th</sup>, 2017. Bristol, United Kingdom.
2. **University College London.** Department of Computer Science, with *Dr. Simon Julier*. July 5<sup>th</sup>- 10<sup>th</sup>, 2016. London, United Kingdom.
3. **University of Chile.** Advanced Mining Technology Center, with *Dr. Javier Ruiz-del-Solar*. June 4<sup>th</sup> – 18<sup>th</sup>, 2016. Santiago, Chile.
4. **University of Bristol.** Faculty of Engineering, with *Dr. Walterio Mayol Cuevas*. November 9<sup>th</sup> – 20<sup>th</sup>, 2015. Bristol, United Kingdom.

# Awards & Achievements

## Prizes to Scientific Papers

1. **Best Paper Award at the Ibero-American Conference on Artificial Intelligence (IBERAMIA) 2022.** Paper: “Where are the Gates: Discovering Effective Waypoints for Autonomous Drone Racing”. Cartagena, Colombia. November 2022.
2. **1,000 CHF Financial Support granted by the Artificial Intelligence Consortium of the CONACYT Public Research Centers,** used to cover the article processing charge of the open-access article “DeepPilot: A CNN for Autonomous Drone Racing”, published in the Journal Sensors, **Q1** (<https://doi.org/10.3390/s20164524>). Funding is given under the project FORDECYT 296737. August 2020.
3. **Full waiver of the APC (1,200 USD) for the Paper** “Detection of nearby UAVs using a multi-microphone array on board a UAV” (extended paper of the paper finalist to the best papers in the IMAV 2019). Published in the International Journal of Micro Air Vehicles **Q3** (<https://doi.org/10.1177/1756829320925748>). Special Issue on the IMAV19. May 2020.
4. **Best Poster Award.** Paper: “Depth Estimation using Óptical Flow and CNN for the NAO Robot”. In the Mexican International Conference on Artificial Intelligence (MICA) 2019. Veracruz, México. October 2019.
5. **Finalist to the Best Paper Award IMAV 2019.** Paper: “Detection of nearby uavs using cnn and spectrograms”. Only 6 papers were selected. International Micro Air Vehicle Conference and Competition (IMAV) 2019. Madrid, Spain. October 2019.
6. **3<sup>rd</sup> Place, Best Paper Award.** Paper: “Combining Deep Learning and RGBD SLAM for Monocular Indoor Autonomous Flight”. Mexican International Conference in Artificial Intelligence (MICA) 2018. Guadalajara, Jalisco. Mexico. October 2018.

## Awards in International Competitions

1. **1st Place Regional Prize Winner of the OpenCV AI Competition 2021. Region South America + Central America + Caribbeans. Monetary Prize: 5,000 USD.** Organised by OpenCV.org, sponsored by Microsoft Azure and Intel. September 2021.
2. **Phase 1 Winner in the OpenCV AI Competition 2021; Prize: 4 OAK-D Units.** Organised by OpenCV.org, sponsored by Microsoft Azure and Intel. March 2021.
3. **3rd Place in the Game of Drones Competition, Tier 1.** Organised by Microsoft and Stanford University at the Thirty-third Annual Conference on Neural Information Processing Systems NeurIPS. Vancouver, Canada. December 2019.
4. **Special Award: Best Flight Performance in the International Micro Air Vehicle Conference and Competition (IMAV) 2019, Indoors Competition.** Madrid, Spain. October 2019.
5. **1st Place in the IEEE IROS 2017 Autonomous Drone Racing competition** in Mos Eisley Vancouver Arena. IEEE International Conference on Intelligent Robotic Systems, IROS 2017. Vancouver, Canada. September 2017.
6. **2nd Place in the International Micro Air Vehicle Conference and Competition (IMAV) 2016,** Indoors Competition. Beijing, China. October 2016.
7. **3000 EUR Travel Support funded by Beijing ZHZ Technologies,** a world-leading company specialising in heavy-lift coaxial unmanned helicopters, to participate in the

International Micro Air Vehicle Conference and Competitions, IMAV 2016 in Beijing, China. May 2016.

8. **Participation in the 9th International Youth Scientific Exhibition/Expo-Science International (ESI) 2003.** Moscow, Russia. July 2003.

## Awards Granted to my Students

1. **1st Place, Best Thesis Award "José Negrete Martínez" Master Thesis Category.** Thesis: *"Geo-localisation of aerial images captured with drones"* Awarded to Aldrich A. Cabrera-Ponce, MSc student supervised by **Dr. Jose Martinez-Carranza**. Granted by the Mexican Society in Artificial Intelligence during the Mexican International Conference on Artificial Intelligence (MICA) 2021. Mexico City, Mexico. October 2021.
2. **1st Place, Best Thesis Award "José Negrete Martínez" Master Thesis Category.** Thesis: *"A CNN Pilot for Autonomous Drone Racing."* Awarded to Leticia Oyuki Rojas-Perez, MSc student supervised by **Dr. Jose Martinez-Carranza**. Granted by the Mexican Society in Artificial Intelligence during the Mexican International Conference on Artificial Intelligence (MICA) 2020. Ciudad de México, México. October 2020.
3. **42,258 mxn Studies Stipend granted by the Artificial Intelligence Consortium of the CONACYT Public Research Centres.** Granted to Aldrich Alfredo Cabrera Ponce, to conclude his Master Thesis during the period of September-December 2020, under the supervision of **Dr. Jose Martinez-Carranza**.
4. **3rd Place, Best Thesis Award "José Negrete Martínez" Master Thesis Category.** Thesis: *"Vision-based Autonomous Navigation for Wind Turbine Inspection using an Unmanned Aerial Vehicle."* Awarded to Rene Parlange, MSc student supervised by **Dr. Jose Martinez-Carranza**. Granted by the Mexican Society in Artificial Intelligence during the Mexican International Conference on Artificial Intelligence (MICA) 2019. Veracruz, México. October 2019.

## Research Awards and Grants

1. **2-Year Grant from Fondo Sectorial CONACYT-INEGI, Project 268528.** First project of its type for technological development and research on drones for the recording of video and aerial photography. Period: 2017-2019, **Funding: 1'570,197.12 mxn.** Mexico. June 2016.
2. **Royal Society-Newton Advanced Fellowship.** Project RAFAGA. Project to carry out research on autonomous drones in GPS-denied environments. 2 Year Grant with 1 Year Extension, period 2015-2018. Funded by the Newton Fund with **£74,000.** United Kingdom. March 2015.

## Awards in National Competitions

1. **1st Place in the Autonomous Drone Category of the Mexican Tournament in Robotics 2019.** Guadalajara, Jalisco, Mexico. March 2019.
2. **1st Place in the Autonomous Drone Category of the Mexican Tournament in Robotics 2018.** Monterrey, Nuevo León, Mexico. March 2018.
3. **1st Place in the Autonomous Drone Category - Advanced Level of the Mexican Tournament in Robotics 2017.** Mexico City, Mexico. March 2017.
4. **1st Place in the Service Robots Category @home of the Mexican Tournament in Robotics.** Cd. Victoria, Tamaulipas. Mexico. March 2016.
5. **1st Place in the Service Robots Category @home of the Mexican Tournament in Robotics.** Mexico City, Mexico. April 2015.

6. **1st Place in the Aquatic Category of the 3rd Mexican Tournament in Cleaning Robots.** Xalapa, Veracruz, Mexico. July 2006.
7. **Honour Mention in the 2003 ACM Central America Programming Contest.** Universidad de las Américas de Puebla. Puebla, México. November 2003.
8. **2<sup>nd</sup> Place in the National Scientific Fair 9<sup>th</sup> Great Meeting of Young Science.** Puebla, Mexico. November 2002.
9. **Honour Mention as Best Delegation Team in the V Mexican Olympiad in Informatics** (Team Leader). Coahuila, Mexico. June 2000.
10. **2<sup>nd</sup> Place in the IV Mexican Olympiad in Informatics.** Mexico City, Mexico. May 1999.

## Prizes due to Academic Performance

1. **Level 5 (for the Highest Score) in the Annual Academic Performance Evaluation of Researchers** in the Computer Science Department at INAOE for the year 2020. Puebla, Mexico. January 2021.
2. **Best Student of the Generation. Master in Research Computer Science Program.** Computer Science Department. Instituto Nacional de Astrofísica Óptica y Electrónica. Puebla, México. November 2005.
3. **Highest Honours – Cum Laude in Bachelor Studies.** Benemérita Universidad Autónoma de Puebla, Puebla, México. July 2004.
4. **Outstanding Academic Performance Scholarship.** Funded by the Sistema Integral de Becas of the Benemérita Universidad Autónoma de Puebla for the period 2000 – 2003. Granted on the basis of Academic Merit.
5. **Outstanding Academic Performance Certificate.** Faculty of Computer Science, Benemérita Universidad Autónoma de Puebla. Puebla, México. July 2001.

## Distinctions and Awards Granted by Societies and Academic Institutions

1. **Member of the National System of Researchers in Mexico, Level II.** Area VIII – Engineering. Period: January 1st, 2024 - December 31st, 2028.
2. **IEEE Senior Member** (Only 10% of the membership). Institute of Electrical and Electronics Engineers. September 2023.
3. **Vice President of the Board of Directors of the Mexican Robotics Federation.** Mexico City, Mexico. June 2023.
4. **Member of the National System of Researchers in Mexico, Level I.** Area VIII – Engineering. Period: January 1st, 2023- December 31st, 2023.
5. **Guest Editor for the International Journal of Micro Air Vehicles.** Best Papers of the IMAV 2021. June 2023. <https://doi.org/10.1177%2F17568293221104967>
6. **Invited to serve as Associate Editor for the IEEE International Conference on Intelligent Robotic Systems IROS 2022.** 2022 - 2023.
7. **Invited to join the Editorial Board as Editor for the Unmanned Systems Journal.** January 2022.
8. **Finance Secretary of the Board of Directors of the Mexican Robotics Federation.** Mexico City, Mexico. May 2022.
9. **General Chair of the International Micro Air Vehicles Conference and Competition (IMAV) 2021.** Granted by the International Committee of the IMAV Conference and Competitions. Puebla, México. November 2021.

10. **Honorary Senior Research Fellow** in the Computer Science Department, Faculty of Engineering of the **University of Bristol**, in the UK. July 2021 – July 2024.
11. **1st Vocal Member of the Board of Directors of the Mexican Robotics Federation.** Mexico City, Mexico. March 2021.
12. **Regular Member of the Mexican Computing Academy.** Mexico City, Mexico. October 2020.
13. **Member of the National System of Researchers in Mexico, Level I.** Area VII – Engineering. Period 2020-2022. September 2019.
14. **67,191 mxn Travel Support funded by the Artificial Intelligence Consortium of the CONACYT Public Research Centres.** Call: Financial Support to Attend Academic Events 2019. Used to attend to the IMAV 2019 held in Madrid, Spain. Funding is given under the project FORDECYT 296737. June 2019.
15. **2nd Vocal Member of the Board of Directors of the Mexican Robotics Federation.** Mexico City, Mexico. June 2019.
16. **I was featured on the cover of the *Komputer Sapiens* Magazine and invited as Guest Editor.** Year X, Volume III. ISSN 2007-0691. A science dissemination magazine issued by the Mexican Society in Artificial Intelligence. Sept-Dec, 2018.
17. **Honorary Senior Research Fellow** in the Computer Science Department, Faculty of Engineering of the **University of Bristol**, in the UK. July 2018 – July 2021.
18. **5th Vocal Member of the Board of Directors of the Mexican Robotics Federation.** Mexico City, Mexico. April 2018.
19. **Member of the National System of Researchers in Mexico, Level C.** Area VII – Engineering. Period 2017-2019. September 2016.
20. **Junior Member of the Mexican Computing Academy.** Mexico City, Mexico. November 2016.
21. **Numerary Member of the Mexican Robotics Federation.** Ciudad Victoria, Mexico. March 2016.
22. **£1000 Software Royalties.** Licensed to SAMSUNG Electronics Ltd. Software developed in the project Real-Time Visual Mapping for the Humanoid Robot RoboRay. Bristol, UK. May 2013.
23. **Recognition Letter from the National Council of Science and Technology of Mexico.** For having successfully concluded the PhD Studies. Scholarship number 301992. Register 189903. July 2012.
24. **Recognition Letter from the National Council of Science and Technology of Mexico.** For having successfully concluded the Master in Research Studies. Scholarship number 207939. November 2022.
25. **£16,000 Studies Stipend. University of Bristol.** Funded by SAMSUNG Electronics Ltd. Project COS.RY9257.6525. May 2011 – June 2012.
26. **£750 Travel Support funded by the British Machine Vision Association (BMVA)** to attend the International Conference on Robotics and Automation (ICRA), May 2012.
27. **Funding to attend the EPSRC-BMVA Summer School in Computer Vision.** Robert's Fund for Training Skills. Computer Science Department. University of Bristol. University of Essex, UK. July 2008.
28. **PhD Scholarship. Funded by the National Council of Science and Technology of Mexico.** Granted on the basis of Academic Merit. September 2007.
29. **Master in Research Scholarship. Funded by the National Council of Science and Technology of Mexico.** Granted on the basis of Academic Merit. September 2004.

# Publications

## Citations

- **Scopus: 707** <https://www.scopus.com/authid/detail.uri?authorId=35113501600>
- **Research Gate 918** <https://www.researchgate.net/profile/Jose-Martinez-Carranza>
- **Google Scholar: 1152** <https://scholar.google.com/citations?user=1xZJTy4AAAAJ&hl=en>
- **ORCID ID:** <http://orcid.org/0000-0002-8914-1904>

## Notes:

- Current and former students under my supervision who collaborated in a publication are marked in **red**.
- Quartiles are assigned according to JCR in the year of publication.

## Peer-Reviewed Journal Papers Indexed in JCR

1. Sánchez Solar, Sergio Daniel, Gustavo Rodríguez Gómez, and **J. Martinez-Carranza**. "Control of a Spherical Robot Rolling over Irregular Surfaces." The Journal of Universal Computer Science **Q4**. <https://doi.org/10.3897/jucs.89703>
2. **J. Martinez-Carranza**, D. Irazu Hernandez-Farias, **V. Vazquez-Meza**, **L. O. Rojas-Perez**, **A. A. Cabrera-Ponce**. "A Study on Generative Models for Visual Recognition of Unknown Scenes Using a Textual Description". Sensors. October, 2023. **Q2**. <https://doi.org/10.3390/s23218757>
3. **L. O. Rojas-Perez**, **Jose Martinez-Carranza**. "Effective training to improve DeepPilot". AI Communications. October 2023. **Q4**. <http://doi.org/10.3233/AIC-230065>
4. C. Osorio Quero, D. Durini, J. Rangel-Magdaleno, **J. Martinez-Carranza**, R. Ramos-Garcia. "Deep-learning blurring correction of images obtained from NIR single-pixel imaging". Journal of the Optical Society of America A. July 2023. **Q3**. <http://dx.doi.org/10.1364/JOSAA.488549>
5. **A. A. Cabrera-Ponce**, M. Martin-Ortiz, **J. Martinez-Carranza**. "Continual learning for topological geo-localisation". Journal of Intelligent & Fuzzy Systems. 1-13. May 2023. **Q4**. <https://doi.org/10.3233/JIFS-223627>
6. **J. Martinez-Carranza**, D. I. Hernández-Farías, **L. O. Rojas-Perez**, **A. A. Cabrera-Ponce**. "Language meets YOLOv8 for metric monocular SLAM". Journal of Real-Time Image Processing. 20, 59. May, 2023. **Q2**. <https://doi.org/10.1007/s11554-023-01318-3>
7. **J. J. A. Osuna-Coutiño**, **Jose Martinez-Carranza**. "High level Structure Recognition in Single Urban Images Using a CNN and SuperPixels". Multimedia Tools and Applications. February 2023. **Q2**. <https://doi.org/10.1007/s11042-023-14422-0>
8. **L. O. Rojas-Perez**, **Jose Martinez-Carranza**. "DeepPilot4Pose: a Fast Pose Localisation for MAV Indoor Flight using the OAK-D Camera". Journal of Real-Time Image Processing. February 2023. **Q2**. <http://doi.org/10.1007/s11554-023-01259-x>
9. **M. Lopez-Garcia**, **J. Martinez-Carranza**. "A CNN-based Approach for Cable-Suspended Load Lifting with an Autonomous MAV". Journal of Intelligent & Robotic Systems. May 2022. **Q3**. <http://doi.org/10.1007/s10846-022-01637-w>
10. C. Osorio, D. Durini, J. J. Rangel-Magdaleno, **J. Martinez-Carranza**, Ruben Ramos-Garcia. "Single-Pixel Near-Infrared 3D Image Reconstruction in Outdoor Conditions". Micromachines. 13, 795. May 2022. **Q2**. <https://doi.org/10.3390/mi13050795>
11. **J. A. Cocoma-Ortega**, F. Patricio, I. D. Limon, **J. Martinez-Carranza**. "Deep Learning-based Approach for Real-Time Rodent Detection and Behaviour

- Classification". Multimedia Tools and Applications. April 2022. **Q2**. <https://doi.org/10.1007/s11042-022-12664-y>
12. J. M. Fortuna-Cervantes, M.T. Ramírez-Torres, M. Mejía-Carlos, J.S. Murguía, **J. Martínez-Carranza**, C. Soubervielle-Montalvo, C. A. Guerra-García. "Texture and Materials Image Classification Based on Wavelet Pooling Layer in CNN". Appl. Sci. 2022, 12, 3592. April 2022. **Q2**. <https://doi.org/10.3390/app12073592>
  13. **A. A. Cabrera-Ponce, J. Martínez-Carranza**. "Convolutional Neural Networks for Geo-Localisation with a Single Aerial Image". Journal of Real-Time Image Processing. February 2022. **Q2**. <https://doi.org/10.1007/s11554-022-01207-1>
  14. **L. O. Rojas-Perez, J. Martínez-Carranza**. "Towards Autonomous Drone Racing without GPU using an OAK-D Smart Camera". Sensors. November 2021. **Q1**. <https://doi.org/10.3390/s21227436>
  15. C. Osorio, D. Durini, J. J. Rangel-Magdaleno, **J. Martínez-Carranza**. "Single-Pixel Imaging: An overview of different methods to be used for 3D space reconstruction in harsh environments". Review of Scientific Instruments. November 2021. **Q3**. <https://doi.org/10.1063/5.0050358>
  16. **R. Parlange, J. Martínez-Carranza**. "Leveraging single-shot detection and random sample consensus for wind turbine blade inspection". Intelligent Service Robotics. September 2021. **Q3**. <https://doi.org/10.1007/s11370-021-00383-6>
  17. **R. Lopez-Campos, J. Martínez-Carranza**. "ESPADA: Extended Synthetic and Photogrammetric Aerial-image Dataset". IEEE Robotics and Automation Letters. October 2021. **Q2**. *Also accepted for oral presentation at IROS 2021*. <https://doi.org/10.1109/LRA.2021.3101879>
  18. **J. A. Cocomo-Ortega, J. Martínez-Carranza**. "A compact CNN approach for drone localisation in autonomous drone racing". Journal of Real-Time Image Processing. August 2021. **Q3**. <https://doi.org/10.1007/s11554-021-01162-3>
  19. **L. O. Rojas-Perez, J. Martínez-Carranza**. "On-board processing for autonomous drone racing: An overview". Integration. May 2021. **Q4**. <https://doi.org/10.1016/j.vlsi.2021.04.007>
  20. **J. A. J. Osuna-Coutiño, J. Martínez-Carranza**. "Volumetric structure extraction in a single image". The Visual Computer. May 2021. **Q2**. <https://doi.org/10.1007/s00371-021-02163-w>
  21. **S. A. Serrano**, E. Santiago, **J. Martínez-Carranza**, E. F. Morales, E. Sucar. "Knowledge-Based Hierarchical POMDPs for Task Planning". Journal of Intelligent & Robotic Systems. April 2021. **Q3**. <https://doi.org/10.1007/s10846-021-01348-8>
  22. **A. Matus-Vargas**, G. Rodriguez-Gomez, **J. Martínez-Carranza**. "Ground effect on rotorcraft unmanned aerial vehicles: A review". Intelligent Service Robotics. January 2021. **Q3**. <https://doi.org/10.1007/s11370-020-00344-5>
  23. **J. Martínez-Carranza**, C. Rascón. "A Review on Auditory Perception for Unmanned Aerial Vehicles". Special Issue "UAV-Based Sensing Techniques, Applications and Prospective". Sensors. December 2020. **Q1**. <https://doi.org/10.3390/s20247276>
  24. **J. M. Fortuna-Cervantes**, M. T. Ramírez-Torres, **J. Martínez-Carranza**, J. S. Murguía-Ibarra, M. Mejía-Carlos. "Object Detection in Aerial Navigation using Wavelet Transform and Convolutional Neural Networks: A First Approach". Programming and Computer Software. Vol 46. No. 8, pp. 536-547. December 2020. **Q4**. <https://doi.org/10.1134/S0361768820080113>
  25. **L. O. Rojas-Perez, J. Martínez-Carranza**. "DeepPilot: A CNN for Autonomous Drone Racing". Special Issue "UAV-Based Sensing Techniques, Applications and Prospective". Sensors. August 2020. **Q1**. <https://doi.org/10.3390/s20164524>
  26. **A. López-Luna**, I. Cruz-Vega, **J. Martínez-Carranza**. "Vertical Surface Contact with a Micro Air Vehicle". International Journal of Micro Air Vehicles. June 2020. **Q3**. <https://doi.org/10.1177/1756829320938745>
  27. **A. Osuna-Coutiño, J. Martínez-Carranza**. "Structure Extraction in Urbanized Aerial Images from a Single View Using a CNN-based Approach". International Journal of Remote Sensing. March 2020. **Q2**. <https://doi.org/10.1080/01431161.2020.1767821>

28. **A. A. Cabrera-Ponce, J. Martínez-Carranza,** C. Rascon-Estebane. "Detection of nearby UAVs using a multi-microphone array on board a UAV". Special Issue of the Best Papers in the International Micro Air Vehicle Competition (IMAV) 2019, extended versions. International Journal of Micro Air Vehicles. May, 2020. **Q3.** <https://doi.org/10.1177/1756829320925748>
29. **R. De Lima, A. A. Cabrera-Ponce, J. Martínez-Carranza.** "Parallel Hashing-based Matching for Real-Time Aerial Image Mosaicing". Journal of Real-Time Image Processing. March, 2020. **Q3.** <https://doi.org/10.1007/s11554-020-00959-y>
30. **J. P. Sanchez-Rodriguez,** A. Aceves-Lopez, **J. Martínez-Carranza,** G. Flores Wysocka. "Onboard Plane-wise Mapping using Super-Pixels and Stereo Vision for Autonomous Flight of a Hexacopter". Intelligent Service Robotics. January, 2020. **Q3.** <https://doi.org/10.1007/s11370-020-00312-z>
31. **L. Pellegrin, J. Martínez-Carranza.** "Towards Depth Estimation in a Single Aerial Image". International Journal of Remote Sensing. Vol 34. January 2020. **Q2.** <https://doi.org/10.1080/01431161.2019.1681601>
32. **A. A. Cabrera-Ponce, L. O. Rojas-Perez,** J.A. Carrasco-Ochoa, J. F. Martinez-Trinidad, **J. Martínez-Carranza.** "Gate Detection for Micro Aerial Vehicles using a Single Shot Detector". IEEE Latin America Transactions. December 2019. **Q4.** <https://doi.org/10.1109/TLA.2019.9011550>
33. **A. Matus-Vargas,** G. Rodriguez-Gomez, **J. Martínez-Carranza.** "A Monocular SLAM-based Controller for Multirotors with Sensor Faults under Ground Effect". Sensors 2019, 19(22), 4948. November 2019. **Q1.** <https://doi.org/10.3390/s19224948>
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72. **J. Martínez-Carranza**, E.O. García Rodríguez, H. Jair Escalante, W. Mayol Cuevas. "Towards Autonomous Flight of Low-Cost MAVs by Using a Probabilistic Visual Odometry Approach". 14th Mexican International Conference on Artificial Intelligence (MICA). Cuernavaca, Mexico. October 2015.
73. V. Lobato-Ríos, A. Muñoz-Meléndez, **J. Martínez-Carranza**. "A NAO-based Intelligent Robotic System for a Word Search-like Game". The Fourth International Conference on Intelligent Systems and Applications (INTELLI). St. Julians, Malta. October 2015.
74. H. Jair Escalante, **J. Martínez-Carranza**, S. Escalera, V. Ponce and X. Baro. "Improving Bag of Visual Words Representations with Genetic Programming". IEEE International Joint Conference on Neural Networks (IJCNN). Ireland, UK. July 2015.
75. **J. Martínez-Carranza** A. Calway and W. Mayol-Cuevas. "Enhancing 6D visual relocalisation with depth cameras". Proceedings of the International Conference on Intelligent Robots and Systems (IROS). Tokyo, Japan. November 2013.
76. **J. Martínez-Carranza**, W. Mayol-Cuevas. "Real-Time Continuous 6D Relocalisation for Depth Cameras". Workshop on Multi View Geometry in Robotics (MVGRO), in conjunction with Robotics Science and Systems (RSS). Berlin, Germany. June 2013.
77. O. Haines, **J. Martínez-Carranza** and A. Calway. "Visual mapping using learned structural priors". Proceedings of the International Conference on Robotics and Automation (ICRA). Karlsruhe, Germany. May 2013.
78. **J. Martínez-Carranza**, A. Calway. "Efficient Visual Odometry Using a Structure-Driven Temporal Map". Proceedings of the International Conference on Robotics and Automation (ICRA). Minnesota, USA. May 2012.
79. **J. Martínez-Carranza**, A. Calway. "Unifying Planar and Point Mapping in Monocular SLAM". Proceedings of the British Machine Vision Conference (BMVC). Aberystwyth, UK. September 2010.
80. **J. Martínez-Carranza**, A. Calway. "Efficiently Increasing Map Density in Visual SLAM Using Planar Features with Adaptive Measurements". Proceedings of the British Machine Vision Conference (BMVC). London, UK. September 2009.
81. **J. Martínez-Carranza**, A. Calway. "Appearance Based Extraction of Planar Structure in Monocular SLAM". Proceedings of the Scandinavian Conference on Image Analysis (SCIA). Oslo, Norway. June 2009.
82. **J. Martínez-Carranza**, L. Altamirano. "FPGA-based Pipeline Architecture to Transform Cartesian Images into Foveal Images by Using a new Foveation Approach". Proceedings of the International Conference on Reconfigurable Computing and FPGAs (ReConfig). Published by IEEE. San Luis Potosí, México. September 2006.
83. **J. Martínez-Carranza**, L. Altamirano. "A New Foveal Cartesian Geometry Approach used for Object Tracking". Proceedings of the 3rd IASTED International Conference on Signal Processing, Pattern Recognition and Applications (SPPRA) 2006. Published by ACTA Press. Innsbruck, Austria. February 2006.
84. **J. Martínez-Carranza**, R. Cumplido, C. Feregrino. "An FPGA Parallel Sorting Architecture for the Burrows Wheeler Transform". Proceedings of the International Conference on Reconfigurable Computing and FPGAs (ReConfig). Puebla, México. Published by IEEE. Puebla, México. September 2005.
85. **J. Martínez-Carranza**, O. Fuentes. "Using C4.5 as Variable Selection Criterion in Classification Tasks". Proceedings of the 9th IASTED International Conference on Artificial Intelligence and Soft Computing (ASC). Published by ACTA Press, pp. 171-176. Benidorm, Spain. September 2005.

## Peer-Reviewed National Conference Papers

1. J. M. Fortuna-Cervantes, M. T. Ramírez-Torres, M. Mejía-Carlos, J. S. Murguía-Ibarra, **J. Martínez-Carranza**. Sistema para clasificación de texturas en imágenes mediante aprendizaje profundo y características wavelet. Congreso Mexicano de Inteligencia Artificial. Published in the Research in Computer Science Journal. ISSN 1870-4069. Volume 150(5). 2021.
2. **E. Salazar-Hidalgo**, J. Castañeda-Camacho, C. Martínez-Torres, **J. Martínez-Carranza**. "Model-based predictive control for trajectory tracking of a quadrotor". Congreso Nacional de Control Automático, (CNCA) 2020. Asociación Mexicana de Control Automático (AMCA). Guanajuato, México. Octubre, 2020.
3. **E. Salazar-Hidalgo**, J. Castañeda-Camacho, C. Martínez-Torres, **J. Martínez-Carranza**. "Seguimiento de trayectorias de un robot móvil diferencial a través del sistema operativo robótico ROS". Congreso Nacional de Mecatrónica. Publicado en las memorias: Desarrollos con Enfoque Mecatrónico. Ingeniería Mecatrónica Aplicada. Asociación Mexicana de Mecatrónica A. C. 2020. ISBN: 978-607-9394-22-6. Querétaro, México. Octubre, 2020.
4. G. Rodríguez-Gómez, **A. Matus Vargas**, **J. Martínez-Carranza**. "Quadrotor Control Simulation with Multirate Integration Methods". Congreso Nacional de Control Automático, (CNCA) 2019. Asociación Mexicana de Control Automático (AMCA). Puebla, México. Octubre, 2019.
5. **A. Muñoz Silva**, G. Rodríguez-Gómez, **J. Martínez-Carranza**. Hovering Controller for a Quadrotor Using Stochastic Test Signals. Congreso Nacional de Control Automático (CNCA). Monterrey, Nuevo Leon, Mexico. June, 2017.
6. **R. Munguía Silva**, **L. O. Rojas Pérez**, **A. A. Cabrera Ponce**, **J. Martínez-Carranza**. On Combining a PID Controller and the Vicon System for Micro-Aerial Vehicles. Congreso Mexicano de Inteligencia Artificial. May 2016.
7. **E. Zecua Corichi**, **I. Caballero Ledesma**, **J. Martínez-Carranza**, C. A Reyes-García. Visual Stimuli Classification to Control Drones. Congreso Mexicano de Inteligencia Artificial. May 2016.
8. **J. Martínez-Carranza**, L. Valentin, **F. Márquez-Aquino**, **J. C. González-Islas** y **N. Loewen**. Obstacle Detection during Autonomous Flight of Drones Using Monocular SLAM. Congreso Mexicano de Inteligencia Artificial. May 2016.
9. **V. Lobato-Ríos**, **J. Martínez-Carranza**, A. Muñoz-Meléndez. Towards Automatic Classification of Age-based Groups by Using a Bayesian Network Approach. Taller de Computación Clínica e Informática Médica, Encuentro Nacional de Ciencias de la Computación (ENC). Ensenada, Mexico. October 2015.
10. **R. Mastachi**, **J. Martínez-Carranza**, E. Morales, D. Figueroa, E. Méndez. Navegación Autónoma para Drones con Detección de Objetos por Visión Computarizada. Congreso Nacional de Ciencias de la Computación. (CONACIC). Puebla, México. October, 2015.
11. **J. Martínez-Carranza**, A. Muñoz. Juego de Dominó para Cuatro Jugadores utilizando Agentes Artificiales. Workshop on automatic deduction and reasoning techniques. VI Mexican International Conference in Computer Science (ENC). ISBN 969-863-859-5. pp. 51-56. Puebla. September 2005.
12. M. Martín, **J. Martínez-Carranza**. Sistema para la Visualización y Análisis de Imágenes Médicas. XXVIII Congreso Nacional de Ingeniería Biomédica (CNIB). Sociedad Mexicana de Ingeniería Biomédica (SOMIB). Acapulco. August 2005.
13. **J. Martínez-Carranza**, M. Martín. Sistema para la Visualización y Análisis de Imágenes Médicas Digitalizadas (SVAIMD). First National Congress in Computer Science, ISBN 968-863-798-X. pp. 178- 181, Puebla. November, 2003.

## Other Peer-Reviewed Reports in International Events

1. **J. Martínez-Carranza**, D. I. Hernández-Farías, **L. O. Rojas-Perez**, **A. A. Cabrera-Ponce**. "Towards Metric Monocular SLAM using Spoken Language and Object Detection". Computer Vision and Pattern Recognition Conference: LatinX in AI (LXAI) Research Workshop 2023, Vancouver, Canada. <https://doi.org/10.52591/lxai202306188>
2. **A. A. Cabrera-Ponce**, M. I. Martín-Ortiz, **J. Martínez-Carranza**. "Discrete Hierarchical Continual Learning for Single View Geo-Localisation". Computer Vision and Pattern Recognition Conference: LatinX in AI (LXAI) Research Workshop 2023, Vancouver, Canada. <https://doi.org/10.52591/lxai202306189>
3. **J. A. Cocoma-Ortega**, **J. Martínez-Carranza**. "Towards fast ego-motion estimation using a two-stream network". Computer Vision and Pattern Recognition Conference: LatinX in AI (LXAI) Research Workshop 2022. New Orleans, USA, 2022. <https://doi.org/10.52591/lxai202206241>
4. **J. A. Cocoma-Ortega**, **L. O. Rojas-Perez**, **J. Martínez-Carranza**. "A CNN-Inertial-based Odometry for Agile 6D Pose Estimation." IROS 2020 FPV Drone Racing VIO competition Results. Organised as part of the Workshop on "Perception, Learning, and Control for Autonomous Agile Vehicles", part of The International Conference on Intelligent Robots and Systems (IROS) 2020. Vancouver, Canada. October, 2020. <https://fpv.ifi.uzh.ch/iros-2020-fpv-drone-racing-vio-competition-results/>
5. **L. O. Rojas-Perez**, **J. Martínez-Carranza**. "QuetzalC++ Team-Results for Final Tier 1". Game of Drones Competition. NeuRIPS 2019. December, 2019. [https://microsoft.github.io/AirSim-NeurIPS2019-Drone-Racing/\\_files/QuetzalC++.pdf](https://microsoft.github.io/AirSim-NeurIPS2019-Drone-Racing/_files/QuetzalC++.pdf)
6. L. Enrique Sucar, E. Morales, **J. Martínez-Carranza**, **L. V. Coronado**, **D. Carrillo**, **F. Marquez**, and **J.C. Gonzalez**. "Markovito's Team Description". RoboCup @home League Team Descriptions, Leipzig, Germany. June, 2016. [http://www.ais.uni-bonn.de/robocup.de/2016/TDPs/AtHome/RoboCup\\_2016\\_AtHome\\_TDP\\_Markovito.pdf](http://www.ais.uni-bonn.de/robocup.de/2016/TDPs/AtHome/RoboCup_2016_AtHome_TDP_Markovito.pdf)

## Technical Reports

1. **Sergio Arredondo Serrano**, **José Martínez Carranza**, Luis Enrique Sucar Succar. "Inter-Task Similarity for Lifelong Reinforcement Learning in Heterogeneous Tasks". Technical No. CCC-21-001. INAOE. May, 2021.
2. **José Arturo Cocoma Ortega**, **José Martínez-Carranza**. "Deep Learning for High-Frequency Camera Pose Estimation". Technical Report. No. 673. INAOE. Diciembre, 2020.
3. **A. Matus-Vargas**, Gustavo Rodríguez-Gómez, **José Martínez-Carranza**. "Quadrotor Flight in Constrained Indoor Environments". Technical Report No. CCC-17-005. INAOE. November, 2017.
4. **A. Osuna-Coutiño**, **José Martínez-Carranza**. "High-Level Structure Extraction from a Single Image". Technical Report CCC-17-004. INAOE. July, 2017.
5. **E. E. Gómez-López**, Israel Cruz-Vega, **José Martínez-Carranza**. "Diseño y construcción de un brazo robótico de 4 grados de libertad". Technical Report 648. INAOE. June, 2017.

## Other Academic Publications

1. **Editor** of the Proceedings of the **12th International Micro Air Vehicle Conference and Competition**. **November**, **2021**. **Open Access**: <http://www.imavs.org/imav2021-proceedings/>

2. **J. Martínez-Carranza (Ed.)**. "IMAV 2021 Competition Rules for Indoor and Outdoor Competitions, and Special Challenges". International Micro Air Vehicle Conference and Competition (IMAV) 2021. Puebla, México. March, 2020.

## Dissemination of Science Articles

1. **L. O. Rojas-Perez, J. Martínez-Carranza**. "Redes Neuronales Convolucionales para Pilotaje Autónomo en Carrera de Drones". Komputer Sapiens. ISSN 2007-0691. Año XIII, Volumen I. 2021. ([CONACYT Index](#)).
2. **J. Martínez-Carranza**. "DJI: dominio y riesgo". Saberes y Ciencia México. No. 90. August 15th, 2019.
3. **J. Martínez-Carranza**. "Drones inteligentes: del 'hobby' a la investigación". Komputer Sapiens. ISSN 2007-0691. Año X, Volumen III. 2018. ([CONACYT Index](#)).
4. C. Martínez Torres, M. L. Abundis de la Mora, J. P. Loredó Pineda, **J. Martínez Carranza**, S. Kabata. "Uso de drones para exploración e inspección de sitios arqueológicos". Komputer Sapiens. ISSN 2007-0691. Año X, Volumen III. 2018. ([CONACYT Index](#)).
5. **F. Márquez-Aquino, J. Martínez-Carranza**. "Visión Artificial y Sensores Vestibles para Controlar Drones". Komputer Sapiens. ISSN 2007-0691. Año VIII, Volumen I. 2016. ([CONACYT Index](#)).
6. Eduardo Morales, **J. Martínez-Carranza**. "Robots y Drones en Nuestra Vida Diaria". Chapter Book in "Ciencia Hacia el Futuro". Published by the Council from Veracruz for Scientific Research and Technological Development in collaboration with the University of Veracruz. March, 2017.
7. **J. Martínez-Carranza**. "Un dron que entregue un paquete podría estar a la vuelta de la esquina". Saberes y Ciencia México. Número 38. April, 2015.

# Projects

## Projects as Principal Investigator

1. **Using Deep Learning for Intelligent Autonomous Drone Tasks**  
Computer Science Department  
Instituto Nacional de Astrofísica Óptica y Electrónica  
**Funder:** Laboratorio Nacional de Supercómputo del Sureste de México LNS.  
**Funding: Supercomputer Access for 1 year.**  
April 2019 - April 2020.
2. **System for Recording and Processing of Aerial Video and Photography with Drones and Light Planes**  
Computer Science Department  
Instituto Nacional de Astrofísica Óptica y Electrónica  
**Funder:** CONACYT-INEGI Fund. **Project No. 268528.**  
**Funding: £65,000.00 ~ 1'570,197.12 mxn**  
March 2017 – February, 2019 (2 years).
3. **RAFAGA: Robust Autonomous Flight of unmanned Aerial vehicles in Gps-denied outdoor Areas**  
Computer Science Department  
Instituto Nacional de Astrofísica Óptica y Electrónica  
**Funder:** Royal Society-Newton Advanced Fellowship Ref, NA140454, UK  
**Funding: £74,000.00 ~ 1'819,678.5 mxn**  
March, 2015 – February, 2018 (3 years).

## Projects as Collaborator

**Note:** **Puce, Puce-2 and Smart Boomerang\*** were acknowledged as **a Project of Technological Development** by the Technological Development Commission of the National System of Researchers (SNI) of CONACYT.

1. **Markovito: a service robot.**  
[Scientific collaboration](#)  
Computer Science Department.  
Instituto Nacional de Astrofísica Óptica y Electrónica.  
**Funder:** various sources.  
January, 2015 – 2018.
2. **\*PUCE-2: Precise navigation of UAVs in Complex Environments.**  
[Research Assistant/Associate.](#)  
Computer Science Department. University of Bristol, UK.  
**Funder:** Defence Science and Technology Laboratory (DSTL).  
February, 2014 - September, 2014.  
**Funding: £94,986.**
3. **\*Smart Boomerang: Teach, Blog and Repeat for an Inspection Flying Robot.**  
[Research Assistant/Associate.](#)  
Computer Science Department. University of Bristol, UK.  
**Funder:** Technology and Science Board (now Innovative UK) Service Robotics call.  
September, 2013 - August, 2014.  
**Funding: £132,000.**
4. **\*PUCE: Precise navigation of UAVs in Complex Environments.**

[Research Assistant.](#)

Computer Science Department. University of Bristol, UK.

**Funder:** Defence Science and Technology Laboratory (DSTL).

August, 2012 - August, 2013.

**Funding: £90,000.**

5. **Real-Time Visual Mapping for the Humanoid Robot Roboray.**

[Part-time Research Assistant.](#)

Computer Science Department. University of Bristol.

**Funder:** SAMSUNG Advanced Institute of Technology.

May, 2011 - April, 2012.

**Funding: 150,000 USD.**

6. **Machine Vision System to Measure the Behaviour of the Mexican Fruit Fly.**

[Lead Programmer.](#)

Computer Vision Laboratory.

Instituto Nacional de Astrofísica Óptica y Electrónica.

**Funder:** UCDAVIS University of California, Davis USA and El Colegio de la Frontera Sur ECOSUR, México. February - July, 2007.

7. **OptoElectronic Sight System - Garfio 2.0.**

[Lead Programmer.](#)

Computer Vision Laboratory.

Instituto Nacional de Astrofísica Óptica y Electrónica.

**Funder:** Secretariat of Navy Armed of Mexico.

April, 2006 - March, 2007.

8. **Design and Construction of a Mobile Robot and Computational Test available in Internet for Master and Undergraduate Students.**

[Programmer.](#)

Faculty of Physics and Mathematics Sciences.

Benemérita Universidad Autónoma de Puebla (BUAP)

**Funder:** BUAP VIEP Project

January - November, 2003.

## Donations from Industry

Donations I have obtained for my research work:

1. Donation of a drone model DJI Matrice 100.

**Donation Monetary Value: 3,000 USD ~ 68,670.00 MXN.**

[Donor Company: Heliboss](#)

September, 2015.

2. Donation of microcontroller computer boards and RGB-D RealSense mini cameras.

**Donation Monetary Value (estimated): 1,500 USD ~ 34,500.00 MXN.**

[Donor Company: Intel – Mexico](#)

November, 2015.

# Patents & Copyrights

## National Patents

1. **Patent: SISTEMA Y MÉTODO DE CREACIÓN DE IMÁGENES 3D-NIR AMPLIADO. File Number MX/a/2022/016091.** In February the 10th of 2023, we were notified that *the formalities examination was approved*. **Authors: Daniel Durini Romero, José Martínez Carranza, José de Jesús Rangel Magdaleno, Ruben Ramos García**

## National Copyrights

1. **Software prototipo para la captura y procesamiento de video e imágenes áreas, incluido su manual de usuario. Author: José Martínez Carranza.** Rama: Programas de computación. Titular: Instituto Nacional de Estadística y Geografía (INEGI). Registro Público del Derecho de Autor. Instituto Nacional de Derecho de Autor (INDAUTOR). Julio 12, 2021.
2. **Metodología para el levantamiento aerofotográfico utilizando cámaras de formato pequeño a bordo de drones y aviones ultraligeros. Author: José Martínez Carranza.** Rama: Literaria. Titular: Instituto Nacional de Estadística y Geografía (INEGI). Registro Público del Derecho de Autor. Instituto Nacional de Derecho de Autor (INDAUTOR). Julio 8, 2021.

# Invited Talks

## International Keynotes and Invited Talks

1. **Keynote:** "Efficient Spatial AI for Autonomous Drones". LatinX in CV Research Workshop co-located with the Conference on Computer Vision and Pattern Recognition (CVPR). June 19th, 2022.
2. **Invited Talk:** "Master Class: Drones Inteligentes". Coloquio de Física del Instituto Tecnológico de Soledad Atlántico. Barranquilla, Colombia. Octubre 14th, 2020.
3. **Keynote:** "Intelligent drones that can see, hear and touch". Workshop 'Culture Drone: Multi-Cultural Human-Drone Interaction', as part of the 16th biennial Participatory Design Conference (PDC). Manizales, Colombia. June 15th, 2020.
4. **Keynote:** "On the deployment of the Intelligent UAS in Smart Cities". TbarCampMx. Organised by T-Systems y Universidad de las Américas Puebla. Puebla, México. November 14th, 2019.
5. **Keynote:** "Convolutional Neural Networks for Intelligent Unmanned Aerial Systems". 7<sup>th</sup> International Workshop on Numerical and Evolutionary Optimization (NEO). Saltillo, Chihuahua. Mexico. September 19th, 2019.
6. **Plenary Talk:** ["Building Better Bridges"](#). Presented in the Third North American Center for Collaborative Development Conference "Climate Resilience and Clean Energy. Las Cruces, New Mexico. April, 2019.
7. **Invited Talk:** "Drones Inteligentes". Presented in the Research Seminar of Advanced Mining Technology Center. Faculty of Physics and Mathematical Sciences of the University of Chile. August, 2018.
8. **Invited Talk:** "Intelligent Drones". Presented to the Dynamic Intelligent Systems, Control and Optimization (Disco) Group led by Dr. Ren. Department of Mechanical Engineering. Texas Tech University. Lubbock, Texas. June, 2018.
9. **Invited Talk:** "Intelligent Drones and Drone Demonstration for Warehouse Inventory". Organised by CCL Corporación Colombiana de Logística. Cali, Colombia. May, 2018.
10. **Invited Talk:** "Filling the gaps of 3D mapping in Monocular SLAM: from inverse depth for planes to super-pixels". IROS 2017 International Workshop on Lines, Planes and Manhattan Models for 3-D Mapping (LPM 2017). Vancouver, Canada. September, 2017.
11. **Keynote:** "Autonomous Navigation and Exploration with Drones Using Vision". 24<sup>th</sup> International Conference on Electronics Communications and Computers. CONIELECOMP 2017. Puebla, Mexico. February, 2017.
12. **Invited Talks (3)** in the Seminar on Computer Vision of the Advanced Mining Technology Center. University of Chile. Santiago, Chile. June, 2016.
13. **Invited Talk:** "Autonomous sUAS: Emerging Technologies & Capabilities". Civil & Commercial Unmanned Aerial Systems Symposium 2015, Defense, AIE, Government, Industry, US, DOD. Washington, USA. October, 2015.
14. **Keynote:** "Towards Aerial Autonomous Navigation in Industrial Application". In the Intelligent Disaster Management Workshop organised by the Monterrey Institute of Technology and Higher Education (ITESM), Mexico and the University of Southampton, UK. Sponsored by the British Council. Queretaro, Mexico. February, 2015.

## National Keynotes in Conferences

1. **Keynote:** "Aprendizaje profundo e IA espacial para robots aéreos." 8vo Simposio Mexicano de Vehículos Aéreos No Tripulados (SIMEVANT). Laboratorio Franco Mexicano de Informática y Automática (LAFMIA). CINVESTAV, Mexico City. November 16th, 2022.
2. **Keynote:** "Navegación, inspección e interacción aérea con pilotos artificiales". Semana Tecnológica de Ingeniería Eléctrica y Electrónica. Tecnológico Nacional de México. Instituto Tecnológico de Aguascalientes. Aguascalientes. November 10th, 2022.
3. **Participation in the Panel:** "El ecosistema de IA en Mexico". 14º Congreso Mexicano de Inteligencia Artificial COMIA 2022. SMIA, ESBIT, Universidad Autónoma Benito Juárez. Oaxaca, Mexico. May 27th, 2022.
4. **Keynote:** "Inspección y sensado remoto utilizando drones e inteligencia artificial espacial". 1er Simposio Multidisciplinario de Ciencia y Tecnología (SimCyT). Unidad Profesional Interdisciplinaria de Ingeniería Campus Hidalgo. Instituto Politécnico Nacional. Pachuca, Hidalgo. May, 21st, 2022.
5. **Keynote:** "Cómo convertir un dron en un robot aéreo inteligente". Congress of Engineering and Technological Entrepreneurship CREATE III. Mesas directivas del Departamento de Computación, Electrónica y Mecatrónica de la Universidad de las Américas Puebla (UDLAP). San Andrés Cholula, Puebla. April, 1st, 2022.
6. **Invited Talk:** "Competencias de Drones Autónomos". Workshop on Intelligent Vehicles and Autonomous Cars Competitions. Organizado por el Centro Nacional de Investigación y Desarrollo Tecnológico (Cenidet), Universidad Tecnológica Emiliano Zapata del Estado de Morelos, IEEE Morelos Chapter. March 10th, 2022.
7. **Keynote:** "Redes Neuronales Convolucionales para Drones Inteligentes". IEEE Congreso Internacional de Ingeniería Mecatrónica, Electrónica y Automotriz. Morelos. México. November 20th, 2020.
8. **Keynote:** "Inspección de Infraestructura Crítica con Drones Inteligentes" en el 2do Coloquio de Energía de la Universidad Politécnica de la Energía. Tula-Allende, Hidalgo. Mexico. October 23th, 2020.
9. **Keynote:** "Drones inteligentes, de la percepción a la interacción aérea". Congreso Internacional de Logística (CILOG) 2020. Organised by the Universidad Politécnica de San Luis Potosí. Mexico, October 8th, 2020.
10. **Plenary Talk:** "¿Cómo serán los drones del futuro?". VIII Seminar on Learning and Applied Computational Intelligence. Organised by the Mexican Research Network on Applied Computational Intelligence. Mexico, October 2nd, 2020.
11. **Keynote:** "Drones que Aprenden". 5to Workshop de Cómputo Inteligente en las Organizaciones, CIO 2020. Organised by the Universidad Tecnológica de Nogales, Sonora. Mexico, September 25th, 2020.
12. **Keynote:** "Drones Autónomos". 1er Congreso de Ingenierías Industria 4.0 "Impulsando la conectividad industrial". Instituto Tecnológico Superior de Ebanos San Luis Potosí. Tecnológico Nacional de México. November 15th, 2019.
13. **Keynote:** "Drones Inteligentes y Redes Neuronales". 10o Congreso de Ingenierías. Universidad del Valle de Puebla. Puebla, México. November 13th, 2019.
14. **Keynote:** "Sistemas Aéreos No Tripulados Inteligentes". 7to Mexican Symposium on Unmanned Aerial Vehicles (SIMEVANT 2019). Secretariat of Navy. Instituto de Investigaciones y Desarrollo Tecnológico de la Armada de México (INIDETAM). Veracruz, México. November 8th, 2019.
15. **Plenary Talk:** "Aprendizaje Profundo para Desarrollo de Drones Inteligentes". VII Seminar on Learning and Applied Computational Intelligence. Organised by the Faculty of Computer Sciences of the Benemerita Universidad Autonoma de Puebla and the Mexican Research Network on Applied Computational Intelligence. Puebla. Mexico, September 20th, 2019.
16. **Invited Talk:** Sistema de Captura y procesamiento de video y fotografía aérea para drones y aviones ligeros. 5th Workshop: "Presentation of the research funded by the

- CONACYT-INEGI Fund”. Organised by the National Institute of Statistics and Geography and the National Council of Science Technology, both from Mexico. Mexico City, August 28<sup>th</sup>, 2019.
17. **Participation in the Panel:** “Implicaciones éticas y filosóficas del uso de los avances recientes en Inteligencia Artificial y el Aprendizaje de Máquina”. 11º Congreso Mexicano de Inteligencia Artificial COMIA 2019. SMIA, CICESE-UT y la Universidad Autónoma de Nayarit. Tepic, Nayarit. Junio 5th, 2019.
  18. **Keynote:** “Intelligent Unmanned Aerial Systems and their Applications”. 11º Congreso Mexicano de Inteligencia Artificial, COMIA 2019. SMIA, CICES-UT y la Universidad Autónoma de Nayarit. Tepic, Nayarit. México. June 6th, 2019.
  19. **Keynote:** “Vehículos Aéreos no Tripulados”. Congreso Multidisciplinario Internacional: la Ingeniería como Fuerza Motriz para el Desarrollo Humano. Tecnológico Nacional de México. TEC de Teziutlán. Teziutlan, Puebla. México. October, 2018.
  20. **Keynote:** “Drones Autónomos Inteligentes”. XI Competencia Feria de Proyectos FEPRO 2018. Benemérita Universidad Autónoma de Puebla. Puebla, México. September, 2018.
  21. **Plenary Talk:** “Drones Inteligentes”. VI National Seminar on Learning and Applied Computational Intelligence. Organised by the Instituto Tecnológico de Culiacan and the Mexican Research Network on Applied Computational Intelligence. Culiacan, Sinaloa. Mexico, September, 2018.
  22. **Keynote:** “Desarrollo Científico de Drones Autónomos”. Multi-disciplinary International Congress. Instituto Tecnológico de Estudios Superiores de Apan. Apan, Hidalgo. México. Agosto, 2018.
  23. **Keynote:** “Drones Inteligentes”. Creating Engineers, 1er Congreso de Ingenierías. Universidad del Valle de México. Puebla, Puebla. Mexico. May, 2018.
  24. **Invited Talk:** Sistema de Captura y procesamiento de video y fotografía aérea para drones y aviones ligeros. 4<sup>th</sup> Workshop: “Presentation of the research funded by the CONACYT-INEGI Fund”. Organised by the National Institute of Statistics and Geography and the National Council of Science Technology, both from Mexico. Mexico City, February 21<sup>th</sup> - 23<sup>th</sup>, 2018.
  25. **Keynote:** “Drones Inteligentes”. 1er Congreso de Ingeniería en Sistemas Computacionales y Aplicaciones. Universidad Metropolitana Politécnica de Puebla. Puebla, México. November, 2017.
  26. **Keynote:** “QuetzalC++, equipo de INAOE ganador del Primer Lugar en la Autonomous Drone Racing Competition 2017”. 5to Mexican Symposium on Unmanned Aerial Vehicles (SIMEVANT 2017). LAFMIA UMI 3175, Secretariat of Navy. Centro de Investigación y Estudios Avanzados del Instituto Politécnico Nacional. Mexico City, México. October, 2017.
  27. **Plenary Talk:** “Exhibición de Drones”. V Seminar on Learning and Applied Computational Intelligence. Organised by the Centro Universitario de los Lagos and the Mexican Research Network on Applied Computational Intelligence. Lagos de Moreno, Mexico, September, 2017.
  28. **Keynote:** “Vuelo Autónomo en ambientes sin GPS utilizando sensores visuales a bordo”. 10º Coloquio Interdisciplinario de Posgrado. Universidad Popular Autónoma del Estado de Puebla. Mexico, June, 2017.
  29. **Invited Talk:** Sistema de Captura y procesamiento de video y fotografía aérea para drones y aviones ligeros. 4<sup>th</sup> Workshop: “Presentation of the research funded by the CONACYT-INEGI Fund”. Organised by the National Institute of Statistics and Geography and the National Council of Science Technology, both from Mexico. Mexico City, February 28<sup>th</sup> and March 1<sup>st</sup>, 2017.
  30. **Plenary Talk:** “Robots Voladores: Retos y Aplicaciones”. International Conference on Mechatronics, Electronics and Automotive Engineering. Morelos, Mexico. November, 2016.

31. **Invited Talk:** "QuetzalCuauhtli: Equipo Mexicano (INAOE) ganador del 2do lugar en la categoría Indoors de la International Micro Aerial Vehicle Conference and Competition (IMAV) 2016". 4<sup>th</sup> Mexican Symposium on Unmanned Aerial Vehicles (SIMEVANT 2016). LAFMIA-UMI, Secretariat of Navy. Centro de Investigación y Estudios Avanzados del Instituto Politécnico Nacional. Mexico City, México. November, 2016.
32. **Invited Talk:** "Drones que pueden ver". IEEE Day. Tecnológico de Monterrey, Campus Puebla. Puebla, Mexico. October, 2016.
33. **Plenary Talk:** "Visión Artificial para Robots Aéreos". Forum for Young Talents. Technological Innovation Park. Universidad Autónoma de Sinaloa. Sinaloa, Mexico. September, 2016.
34. **Plenary Talk:** "Extracción de estructuras y mapeo 3D a partir del procesamiento de imágenes en tiempo real". IV Seminar on Learning and Applied Computational Intelligence. Organised by the Universidad Michoacana de San Nicolás de Hidalgo and the Mexican Research Network on Applied Computational Intelligence. Michoacán, México. September, 2016.
35. **Invited Talk:** "Robots voladores: retos y aplicaciones". Infosecurity Summit. Centro Banamex, Mexico City, Mexico. April, 2016.
36. **Plenary Talk:** "[Robots voladores: retos y aplicaciones](#)". Mexican Tournament in Robotics. Organised by the Mexican Robotics Federation and the Universidad Politécnica de Victoria. Tamaulipas, México. March, 2016.
37. **Plenary Talk:** "Visual Processing for Robotic Platforms". XI Taller-Escuela de Procesamiento de Imágenes (PI'15) y V Taller de Reconocimiento Estadístico de Patrones (SPR'15). Center for Research in Mathematics (CIMAT). Guanajuato, México. November, 2015.
38. **Invited Talk:** "Localización 6D en Tiempo Real de Drones Utilizando Cámaras a Bordo". 3<sup>rd</sup> Mexican Symposium on Unmanned Aerial Vehicles (SIMEVANT 2015). LAFMIA UMI 3175, Secretariat of Navy. Centro de Investigación y Estudios Avanzados del Instituto Politécnico Nacional. Mexico City, México. November, 2015.
39. **Plenary Talk:** "Robots autónomos que pueden escuchar, ver, sujetar y hasta volar". IV Congreso Internacional Tecnologías de la información y Comunicación. Universidades Tecnológicas y Politécnicas Riviera Maya, Quintana Roo, 2015. October, 2015.
40. **Invited Talk:** "Visión artificial para robots autónomos". 3<sup>rd</sup> Symposium on Engineering. Universidad Autónoma de la Ciudad de México. Mexico City, Mexico. August, 2015.
41. **Plenary Talk:** "Lo que un sistema artificial puede hacer con un ojo o dos", 2do Congreso Internacional Tecnologías de la información y Comunicación. Universidad Politécnica de Tlaxcala. Tlaxcala, México. September, 2013.

## Invited Talks and Outreach

1. **Invited Talk:** "Inteligencia artificial espacial para robots aéreos". 2do. Seminario Semestral de Ciencia y Tecnología Aplicada de Ingeniería Electrónica 2022. Tecnológico Nacional de México. Instituto Tecnológico Superior de Acatlán de Osorio. November 7th, 2022.
2. **Invited Talk:** Inteligencia artificial espacial para robots aéreos. Participación en el seminario Francisco Mejia Lira. Instituto de Investigación en Comunicación Óptica. Universidad Autónoma de San Luis Potosí. San Luis Potosí. Mexico. August 30th, 2022.
3. **Invited Talk:** Demonstration of Autonomous Drones. Festival del Libro San Andrés Cholula 2022. Organised by the H. Ayuntamiento de San Andrés Cholula. San Andrés Cholula. Puebla. April 29th, 2022.
4. **Invited Talk:** "Inteligencia Artificial Espacial para Drones Autónomos". Evento Mind Builders, organizado por la Rama Estudiantil IEEE UDLAP. Puebla, México. November 3rd, 2021.

5. **Invited Talk:** "Drones Inteligentes". IER Coloquio de Robótica y Control Aplicado a la Mecatrónica. Club de Robótica. Tecnológico Nacional de Mexico. Instituto Tecnológico de Veracruz. Veracruz, México. July 1st, 2021.
6. **Keynote:** "Percepción Aérea con Drones". SEMANA TEC-INAOE 2021. Tecnológico Nacional de México. Instituto Tecnológico de Puebla. Puebla, México. March 3rd, 2021.
7. **Keynote:** "Carrera de Drones Autónomos". Ponente en la serie "Hablemos sobre IA". Alianza de Inteligencia Artificial de Centros Públicos CONACYT. Guanajuato, México. November 5th, 2020.
8. **Keynote:** "Percepción Artificial para Drones Autónomos". Semana Cultural IESAC. Instituto de Estudios Superiores A. C. Incorporado a la BUAP. Puebla, México. October 23th, 2020.
9. **Invited Talk:** "Percepción, la pieza clave para el desarrollo de la nueva generación de drones". Seminario Departamental. Centro de Investigación en Matemáticas (CIMAT). Guanajuato, Mexico. September 28th, 2020.
10. **Invited Talk:** "Drones inteligentes que pueden ver, escuchar y tocar". Seminario Académico III del Programa en Ciencias en Sistemas Digitales en el Centro de Investigación y Desarrollo de Tecnología Digital CITEDI-IPN, Tijuana B.C. México. June 26th, 2020.
11. **Invited Talk:** "Sistemas Aéreos No Tripulados e Inteligencia Artificial". Seminario de Computación y Ciencia de la Licenciatura en Tecnologías para la Información en Ciencias. Escuela Nacional de Estudios Superiores Unidad Morelia, UNAM. Morelia, México. October 25th, 2019.
12. **Invited Talk:** "Drones Autónomos". Semana Cultural IESAC del Instituto de Estudios Superiores en Arquitectura y Diseño A. C. Puebla, México. October 23th, 2019.
13. **Invited Talk:** "El grupo de sistemas no tripulados del INAOE". Seminario de Ingeniería Eléctrica y Electrónica SIEE2019. Instituto Tecnológico de Aguascalientes. Tecnológico Nacional de México. Aguascalientes, México. October 17th, 2019.
14. **Invited Talk:** "Sistemas Aéreos no Tripulados Inteligentes y sus Aplicaciones". Programa de Verano de Investigación Científica en INAOE (VICI 2019). Instituto Nacional de Astrofísica Óptica y Electrónica. Puebla, México. June 20th, 2019.
15. **Keynote:** "Uso de drones para el monitoreo, inspección y vigilancia de terreno". Programa Explora edición 2019. Universidad Autónoma de Nayarit Secretaría de Investigación y Posgrado Dirección de Fortalecimiento a la Investigación. Tepic, Nayarit. June 7th, 2019.
16. **Invited Talk.** Jornada Chicas y ciencia: un espectro de oportunidades. INAOE y el Capítulo Estudiantil Women in Optics. Mayo 3rd, 2019.
17. **Talk and Demonstration:** "Laboratorios de Robótica", impartida para la Universidad Tecnológica de Gutiérrez Zamora, en el programa institucional de visitas de INAOE. Marzo 13th, 2019.
18. **Talk:** Master Channel Group, en el programa institucional de visitas de INAOE. Marzo 11th, 2019.
19. **Invited Talk:** "Drones Inteligentes Autónomos". Club Rotario Puebla Centro Histórico Distrito 4185. Puebla, México. November, 2018.
20. **Invited Talk:** "Desarrollo y Aplicaciones de Drones Inteligentes". Weekly Seminar of the Master Program in Electronic Sciences, option on Automation. Facultad de Ciencias de la Electrónica. Universidad Autónoma de Puebla. Puebla, México. September, 2018.
21. **Keynote:** "Drones Inteligentes". 3er Taller de Mecatrónica Moderna. Universidad Politécnica de Tlaxcala. Tlaxcala, Puebla. Mexico. Julio, 2018.
22. **Invited Talk:** "Drones Inteligentes: Retos y Oportunidades." TecINAOE 2018. IEEE Rama Estudiantil IT Puebla. Instituto Tecnológico de Puebla. Puebla. Mexico. March, 2018.
23. **Invited Talk:** "Drones Inteligentes and Demonstration". Research Seminar of the PhD Program in Data Science of the Centro de Investigación e Innovación en Tecnologías de la Información y Comunicación INFOTEC. February, 2018.

24. **Exhibition of Drones. Escuela de Invierno de la Federación Mexicana de Robótica.** Casino Xalapeño. Xalapa, Veracruz. Mexico. February, 2018.
25. **Invited Talk:** "Plática sobre el trabajo y resultados obtenidos por el equipo QuetzalC++". **Honeywell-Technology Solutions (HTS).** Ciudad de Mexico, Mexico. December, 2017.
26. **Participation in** "Puertas Abiertas". Instituto Nacional de Astrofísica Óptica y Electrónica. Puebla, Mexico. Noviembre, 2017.
27. **Invited Talk:** "Drones Autónomos en Ambientes sin GPS". Primera Semana Estatal Femenil de Ciencia y Tecnología. Universidad Tecnológica Minera de Zimapán. Zimapán, Hidalgo, Mexico. November, 2017.
28. **Participation in** Semana Nacional de Ciencia y Tecnología. Instituto Nacional de Astrofísica Óptica y Electrónica. Puebla, Mexico. November, 2017.
29. **Invited Talk:** "Visión Computacional para Vuelo de Drones Pequeños en Ambientes sin GPS". Semana Nacional de Ciencia y Tecnología. Universidad Politécnica de Tlaxcala. Tlaxcala, Mexico. November, 2017.
30. **Invited Talk in** Semana Nacional de Ciencia y Tecnología. Tecnológico Superior de Cananea. Cananea, Sonora. November, 2017.
31. **Invited Talk:** "Investigación sobre Drones". Semana Nacional de Ciencia y Tecnología. CBETIS no 106. Cananea, Sonora. November, 2017.
32. **Invited Talk.** "Conferencia de Robótica". Conferencia a grupo visitante del Instituto Politécnico Nacional. Instituto Nacional de Astrofísica Óptica y Electrónica. Puebla, Mexico. Octubre, 2017.
33. **Invited Talk:** "Visión Computacional para Vuelo de Drones Pequeños en Ambientes sin GPS". **T-Systems.** Puebla, Mexico. October, 2017.
34. **TEDx Invited Talk:** "*Drones que pueden ver*". **TEDxTecdeMtyPuebla.** Tecnológico de Monterrey Campus Puebla. Puebla, México. August, 2017.
35. **Invited Talk:** "Drones Autónomos". Seminario Doctoral del Tecnológico de Monterrey, Campus Estado de México. Mexico City, México. August, 2017.
36. **Invited Talk:** "Drones Autónomos". Seminario de la Red de Aprendizaje, Investigación y Desarrollo de Agentes Autónomos. Universidad Autónoma de México, Unidad Cuajimalpa. Ciudad de México. México. July, 2017.
37. **Invited Talk.** "Drones Inteligentes que Pueden Ver". Programa de Verano de Investigación Científica en INAOE. Instituto Nacional de Astrofísica Óptica y Electrónica. Puebla, Mexico. July, 2017.
38. **Invited Talk:** "Drones Autónomos en Ambientes sin GPS". Seminario del grupo de Robótica y Manufactura Avanzada del CINVESTAV, Unidad Saltillo. Saltillo, México. May, 2017.
39. **Invited Talk:** "Sobre Drones y Robots Aéreos". Ciclo de Conferencias en QUADRIVIA, ciencia hasta en el bar. Puebla, México. May, 2017.
40. **Invited Talk:** "Localización visual eficiente para vuelo autónomo en ambientes sin GPS". División Académica de Ingeniería. Instituto Tecnológico Autónomo de México. Ciudad de México. México. Marzo, 2017.
41. **Demonstration:** "QuetzalCuauhtli del Proyecto Robust Autonomous Flight of Unmanned Aerial Vehicles in GPS Denied Outdoor Areas (RAFAGA)". **Escuela de Invierno de Robótica. Federación Mexicana de Robótica.** Universidad Popular Autónoma del Estado de Puebla. Puebla, Mexico. Enero, 2017.
42. **Invited Talk:** "DRON QuetzalCuauhtli". 2<sup>nd</sup> Workshop on Mechatronics Engineering. Instituto Tecnológico Superior de Atlixco. Atlixco, Puebla. México. November, 2016.
43. **Keynote:** "Robótica Aérea: Drones Inteligentes". Feria Internacional de la Lectura Infantil y Juvenil (FILIJ) 2016. Ciudad de México. November, 2016.
44. **Invited Talk.** "Demostración de Drones". Un día en la Semana Mundial del Espacio. Facultad de Ingeniería. Benemérita Universidad Autónoma de Puebla. October, 2016.

45. **Plenary Talk:** "Robótica Aérea". XXIII Semana Nacional de Ciencia y Tecnología. CONACYT. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico. October, 2016.
46. **Invited Talk:** "Demostración de robótica aérea". Semana i. Instituto Nacional de Astrofísica Óptica y Electrónica y Tecnológico de Monterrey. Puebla, Mexico. September, 2016.
47. **Invited Talk:** "Drones, volando y evitando obstáculos de manera automática". Actividades del App Adventure 2016. Instituto Tecnológico Superior de Huichapan. Huichapan, México. April, 2016.
48. **Invited Talk:** "Proyecto RAFAGA". 4ta Feria de las Ciencias, Artes y Humanidades. Preparatoria Emiliano Zapata. Benemérita Universidad Autónoma de Puebla. Puebla, México. April, 2016.
49. **Invited Talk:** "Robots inteligentes que pueden ver". Departamento de Ciencias e Ingenierías. Universidad Iberoamericana. Puebla, México. April, 2016.
50. **Invited Talk:** "Demostración de robótica aérea". Feria de Divulgación Científica. Secretaría de Educación Pública. Puebla, México. April, 2016.
51. **Invited Talk:** "Robotica Aérea". For visitors from the Universidad Tecnológica de Morelos. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico. April, 2016.
52. **Plenary Talk:** "Construcción y uso de mapas 3D utilizando cámaras a bordo de drones". Baños de Ciencia con el Gran Telescopio Milimétrico Alfonso Serrano. Ciudad Serdan, Puebla. March, 2016.
53. **Invited Talk:** "Demostración de Drones Inteligentes". 22a Feria de las Matemáticas. Deportivo La Carolina. Atlixco, Puebla, Mexico. March, 2016.
54. **Invited Talk:** "Mapeando con Drones". 9A Feria Internacional de la Lectura. Puebla, Mexico. February, 2016.
55. **Invited Talk:** "Drones pequeños volando más allá de la línea de vista". Seminario de Ciencias. Instituto de Investigaciones en Ciencias Básicas y Aplicadas. Universidad Autónoma del Estado de Morelos. Morelos, México. February, 2016.
56. **Invited Talk:** "Drones Inteligentes que generan y usan mapas 3D". Casa del Puente, Cholula, Puebla. Mexico. January, 2016.
57. **Plenary Talk:** "Robots voladores". 22a Semana Nacional de Ciencia y Tecnología". Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla y Cananea, Mexico. October, 2015.
58. **Plenary Talk:** "Localización y Control de UAVs en ambientes sin GPS". Celebraciones del Aniversario de la Facultad de Ciencias de la Electrónica. Benemérita Universidad de Autónoma de Puebla. October, 2015.
59. **Invited Talk:** "Veraneando en el INAOE", semana de actividades para niños en INAOE. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico. July, 2015.
60. **Keynote:** "Localización y Vuelo Autónomo de Drones en Ambientes sin acceso a GPS". at Campus Party. Guadalajara, Mexico. July, 2015.
61. **Invited Talk:** "Demostración de Sabina, robot de servicio y drones". ExpoShow Auto y Avión y Drones 2015. Puebla, Mexico. June, 2015.
62. **Plenary Talk:** "Los robots que un día estarán entre nosotros". Robotix FAIRE. UNAM. Ciudad de México. June, 2015.
63. **Invited Talk:** "Líneas de Investigación y Posgrado de la Coordinación de Ciencias Computacionales" para estudiantes del Tecnológico de Huauhinango. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico. May, 2015.
64. **Invited Talk:** "Líneas de Investigación y Posgrado de la Coordinación de Ciencias Computacionales" para estudiantes del Tecnológico de Zamora. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico. May, 2015.

65. **Invited Talk:** "Líneas de Investigación y Posgrado de la Coordinación de Ciencias Computacionales" para estudiantes del Tecnológico de Tacámbaro. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico. April, 2015.
66. **Invited Talk:** "Aerial Robots". Open Week 2015. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico. April, 2015.
67. **Invited Talk:** "Fast 6D Relocalisation for Teach-and-Repeat Flight in Micro Aerial Vehicles". Seminario Departamental. Centro de Investigación en Matemáticas (CIMAT). Guanajuato, Mexico. November, 2014.
68. **Invited Talk:** "[Demonstration of Visual SLAM system to HRH Principe Andrew, Duke of York](#)". Bristol Robotics Laboratory. Bristol, UK. February, 2014.
69. **Invited Talk:** "Navegación Autónoma en Robots Aéreos y Terrestres". Coordinación de Ciencias Computacionales. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico. June, 2014.
70. **Participation in the [Demonstration on Visual Mapping for Drones. National Physical Laboratory](#).** London, the UK. September, 2013.
71. **Invited Talk:** "Relocalización rápida 6D para plataformas aéreas". Seminario Departamental. Centro de Investigaciones en Computación del Instituto Politécnico Nacional. Mexico City, Mexico. September, 2013.
72. **Invited Talk:** "Localización y mapeo simultáneo utilizando visión monocular en tiempo real". Facultad de Ciencias Computacionales. Benemerita Universidad de Puebla. Puebla, Mexico. December, 2012.
73. **Workshop Assistant:** Hands-on Computer Science & Robot Programming Event. University of Bristol. 2007-2010.
74. **Participation** as scientific staff in the ***18th International Olympiad in Informatics***, celebrated in Mexico, August 2006.
75. **Leader of the State Team from Puebla** that participated in Mexican Olympiad in Informatics, during the period 2000 – 2003.

# Students & Staff

## Current PhD Students

1. **Esteban Tlelo Coyotecatl**. Neural Controllers for Agile Flight. **Supervisor: Jose Martinez-Carranza**. Co-Supervisor Alejandro Gutierrez-Giles. [September 2023 - August 2027].
2. **Leticia Oyuki Rojas Perez**. Autonomous Drone Racing in Complex Environments. **Supervisor: Jose Martinez-Carranza**. [September 2020 – August 2024].
3. **Jesús Daniel Olivares Figueroa**. Autonomous Drone Racing in Complex Environments. **Supervisor: Jose Martinez-Carranza**. [September 2020 – Agosto 2024].
4. **Sergio Arredondo Serrano**. Long-Life Learning for Autonomous Robots. **Supervisor: Jose Martinez-Carranza**; Co-Supervisor: Enrique Sucar Succar. [January 2020 – December 2023].
5. **José Domingo Pájaro Adrián**. “Algoritmos de consenso para el control de vuelo de un grupo de robots voladores”. Supervisor: Dra. Amparo Dora Palomino Merino. **Co-Supervisor: Jose Martinez-Carranza**. [September 2020 – December 2024].
6. **Edmundo Miguel Cortés Vázquez**. “Detección de Personas en Imágenes Multiespectrales con Aprendizaje Profundo”. Supervisor: Dra. Amparo Dora Palomino Merino. **Co-Supervisor: Jose Martinez-Carranza**. [September 2021 – December 2024].

## Current 2-Year Master in Research Students

1. **Victoria Eugenia Vázquez Meza**. Language and Generative Models for Autonomous Drones. [to conclude: August 2024].
2. **Keving Fulgencio Guzmán Durán**. Neural Controllers for Agile Flight. [to conclude: August 2024].
3. **Erik Francisco Agustín**. Neural Controller Trained with Temporal Information. [to conclude: December 2023].
4. **Jose Nava Zavala**. Depth Estimation in a Single Monocular Image. [to conclude: August 2023].

## Current Postdoctoral Staff

1. **Dr. Carlos Alexander Osorio Quero**. Intelligent Rescue System Based on Hyperspectral Vision and GSM for UAV Systems. September 2023 – August 2025.

## Former Postdoctoral Staff

1. **Dr. Mariana E. Miranda Varela**. Optimization, Evolutionary Computing. September 2018 – December 2019.
2. **Dr. Raymundo Domínguez Colín**. Computer Vision. September 2018 – April 2019.
3. **Dr. Luis Pellegrin Zazueta**. Depth Estimation in Aerial Single Depth Images. November 2017 – July 2018.
4. **Dr. Gregorio Martinez Jiménez**. 3D Reconstruction of Aerial Images using Open Source Software. June – August 2017.

## Alumni Graduated from a PhD Program

1. **José Arturo Cocoma Ortega**. "Aprendizaje Profundo para la Estimación de Pose para Cámara a Alta Frecuencia". **Supervisor: Dr. José Martínez-Carranza**. Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. June 2nd, 2023.
2. **Antonio Matus Vargas**. "Quadrotor Flight in Constrained Indoor Environments". Supervisor: Dr. Gustavo Rodriguez Gomez, **Co-Supervisor: Dr. José Martínez-Carranza**. Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. November 20th, 2020.
3. **Aarón Eleazar López Luna**. "Modelado y diseño de un control unificado de un manipulador aéreo tipo vtol para misiones en el exterior". Supervisor: Israel Cruz Vega, **Co-Supervisor: Dr. José Martínez-Carranza**. Electronics Department, Instituto Nacional de Astrofísica Óptica y Electrónica.. November 20th, 2020.
4. **J. A. de Jesús Osuna Coutiño**. "High-Level Structure Extraction from a Single Image". **Supervisor: Dr. José Martínez-Carranza**. Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. August 28th, 2020.

## Alumni Graduated from a 2-Year Master in Research Program

1. **David Moreno Sánchez**. "Planificación y Seguimiento de Trayectoria para Intercepción de Drones". Supervisor: Gustavo Rodriguez-Gomez. **Co-supervisor: Dr. José Martínez-Carranza**. Maestría en Ciencias en el Área de Ciencia y Tecnología del Espacio. Instituto Nacional de Astrofísica Óptica y Electrónica. March 29th, 2023.
2. **Eng. Cristina Pérez Ramos**. "Vuelo en Formación de Múltiples UAV's". Supervisor: Gustavo Rodriguez-Gomez. **Co-supervisor: Dr. José Martínez-Carranza**. Maestría en Ciencias en el Área de Ciencia y Tecnología del Espacio. Instituto Nacional de Astrofísica Óptica y Electrónica. July 13th, 2022.
3. **Eng. Rafael López Campos**. "Depth Estimation in Monocular Aerial Images". **Supervisor: Dr. José Martínez-Carranza**. Coordinación de Ciencias Computacionales, Instituto Nacional de Astrofísica Óptica y Electrónica. November 24th, 2021.
4. **Eng. Jesús Daniel Olivares Figueroa**. "Un enfoque compacto para la evaluación emocional de pilotos de drones utilizando BCI". **Director: Dr. Israel Cruz Vega**. **Co-Director: Dr. José Martínez-Carranza**. Electronics Department, Instituto Nacional de Astrofísica Óptica y Electrónica. August 13th, 2021.
5. **Eng. Aldrich Alfredo Cabrera Ponce**. "Geo-localisation of aerial images captured with Drones". **Supervisor: Dr. José Martínez-Carranza**. Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. February 25th, 2021.
6. **Eng. Eduardo Salazar Hidalgo**. "Control MPC de un cuadricóptero para el seguimiento de trayectorias basado en odometría visual". Supervisors: Josefina Castañeda Camacho, Cesar Martínez Torres. **Co-Supervisor: Dr. José Martínez-Carranza**. **Faculty of Electronic Sciences, Benemérita Universidad Autónoma de Puebla**. Master in Electronic Science, Automation Speciality. January 29th, 2021.
7. **BSc. Manuel López García**. "Deep-Learning for Load Lifting with a Micro Air Vehicle". **Supervisor: Dr. José Martínez-Carranza**. Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. November 13th, 2020.
8. **Eng. Leticia Oyuki Rojas Pérez**. "A CNN Pilot for Autonomous Drone Racing". **Supervisor: Dr. José Martinez-Carranza**. Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. August 21th, 2020.
9. **Eng. Oswaldo Alquisiris Quecha**. "Localización del robot NAO usando flujo óptico para la estimación de profundidad". **Supervisor: Dr. José Martinez-Carranza**. Computer

Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. February 27th, 2020.

10. Eng. René Parlange Chavarria. "Vision-based Autonomous Navigation for Wind Turbine Inspection". **Supervisor: Dr. José Martínez-Carranza.** Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. February 18th, 2019.
11. Eng. Luis González Guzmán. "Descriptores de Línea para la Creación de Mosaicos de Imágenes Térmicas Aéreas". **Supervisor: Dr. José Martínez-Carranza.** Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. December 13th, 2018.
12. Eng. Esteban Jaramillo Cabrera. "Mejora del Reconocimiento de Objetos, Acciones y Efectos usando los Ofrecimientos Probabilísticos de los Objetos". Supervisor: Dr. Eduardo Morales Manzanares. **Co-Supervisor: Dr. José Martínez-Carranza.** Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. November 28th, 2018.
13. Eng. Arturo Muños Silva. MSc in Science and Technology of the Space. "Estabilidad de cuadradores con carga suspendida.". Supervisor: Dr. Gustavo Rodríguez-Gomez. **Co-Supervisor: Dr. José Martínez-Carranza.** Science and Technology of Space Master Program, Instituto Nacional de Astrofísica Óptica y Electrónica. February 27th, 2018.
14. Eng. Dania Andrea Largo Jaimes. MSc in Electronic Science. "Navegación autónoma en ambientes forestales". Supervisor: Dr. José de Jesús Rangel Magdaleno. **Co-Supervisor: Dr. José Martínez-Carranza.** Electronics Department, Instituto Nacional de Astrofísica Óptica y Electrónica. September 4th, 2017.
15. Eng. Beatriz Hernández Hernández. MSc in Electronic Science. "Vuelo autónomo para mantener un objetivo en el campo de visión de un dron". Supervisor: Dr. Israel Cruz Vega. **Co-Supervisor: Dr. José Martínez-Carranza.** Electronics Department, Instituto Nacional de Astrofísica Óptica y Electrónica. September 1st, 2017.
16. Eng. Claudia Cruz Martínez. MSc in Computer Science. "Mejoramiento en tiempo real de mapas 3D poco densos mediante superpixels". **Supervisor: Dr. José Martínez-Carranza.** Computer Science Department, Instituto Nacional de Astrofísica Óptica y Electrónica. October 26th, 2016.
17. BSc. Roberto de Lima Hernández. MSc in Computer Science. "Real-Time Extraction of High Level Structures Using a Semi-Calibrated Stereo System". **Supervisor: Dr. José Martínez-Carranza.** Co-Supervisor: Dra. Alicia Morales Reyes. Computer Science Department, Instituto Nacional de Astrofísica Óptica. October 31th, 2016.
18. Eng. Nils Loewen Frey. Master in Manufacturing Systems. *Obstacle avoidance during the autonomous flight of a quadcopter in gps-denied environments.* Supervisor: Rick Leigh Swenson Durie. **Co-Supervisor: Dr. José Martínez-Carranza.** Instituto Tecnológico de Monterrey, campus Querétaro. March 2nd, 2016.

## Alumni Undergraduate Students

1. Daniel Steven Levkovits Scherer. "Vuelo autónomo de un VANT para generar plan de vuelo mediante reconocimiento de objetos usando CNNs". Ingeniería Electrónica. Universidad Simón Bolívar. **Co-Supervisor: Dr. José Martínez-Carranza.** May 27, 2019.
2. Edgar Jacob Sosa Ceron. "Coloreo y mallado para mapeo 3D en tiempo real". Licenciatura en Ingeniería en Ciencias de la Computación. Benemérita Universidad Autónoma de Puebla. **Co-Supervisor: Dr. José Martínez-Carranza.** May 22th 2019.
3. Roberto Munguía Silva. Eng. in Mechatronics. *Depth Estimation from a Monocular Camera using Óptical Flow.* Instituto Tecnológico Superior de Atlixco. **Supervisor: Dr. José Martínez-Carranza.** August 22th, 2018.
4. Leticia Oyuki Rojas Pérez. Eng. in Mechatronics. *Autonomous Navigation System for Micro Aerial Vehicles.* Instituto Tecnológico Superior de Atlixco. **Supervisor: Dr. José Martínez-Carranza.** June 20th, 2018.

5. **Aldrich Alfredo Cabrera Ponce**. Eng. in Mechatronics. *Mosaico de Imágenes Aéreas basado en Código Libre*. Instituto Tecnológico Superior de Atlixco. **Supervisor: Dr. José Martínez-Carranza**. June 8th, 2018.
6. **María Lisset Abundis de la Mora**. Eng. in Mechatronics. *Procesamiento de Imágenes Térmicas Aéreas para la Construcción y Análisis de Modelos Tridimensionales en Zonas Arqueológicas*. Universidad de las Américas Puebla. Supervisor: Dr. Rubén Alejos Palomares. **Co-Supervisor: Dr. José Martínez-Carranza**. May 15th, 2018.
7. **Johan Pablo Loredó**. Eng. in Mechatronics. *Sistema de mapeo tridimensional en línea basado en código abierto: Aplicación en regiones arqueológicas*. Universidad de las Américas Puebla. Supervisor: Dr. Cesar Martínez-Torres. **Co-Supervisor: Dr. José Martínez-Carranza**. May 15th, 2018.

## Former Collaborators and Students in Internships

1. **QuetzalCuauhtli Team Member**. Luis Valentin Coronado. August - October, 2016.
2. **Research Assistant**. Esteban Omar García Rodríguez. September, 2015 - December, 2016.
3. **Research Assistant**. Francisco Marquez. September, 2015 - February, 2016.
4. **Internship**. **Esteban Tlelo Coyotecatl**. Universidad de las Américas Puebla. August - November, 2019.
5. **Internship**. **Aldrich Alfredo Cabrera Ponce**. Tecnológico Superior de Atlixco. January-July, 2016.
6. **Internship**. **Roberto Munguia Silva**. Tecnológico Superior de Atlixco. January-July, 2016.
7. **Internship**. **Andres Aguilar Miguel**. Universidad Politécnica de Chiapas. February-May, 2016.
8. **Social Service**. **Favio Mejia Basañez Roberto**. Universidad de las Américas Puebla. December, 2015-June, 2016.
9. **Social Service**. **Alfonso Rojas Oaxaca**. Universidad de las Américas Puebla. December, 2015-June, 2016.
10. **Social Service**. **Isaias Carrera Ventura**. Benemérita Universidad Autónoma de Puebla. June-December, 2016.
11. **Internship**. **Carlos Eduardo Méndez Aguilar**. Universidad Politécnica de Chiapas. Mayo-Agosto, 2015.

## Internships Sponsored by the Mexican Academy of Science

1. **Octavio Aguirre Rodríguez**. XXX Verano de la Investigación Científica. July – August 2020.
2. **José Adrián Beltrán**. XXX Verano de la Investigación Científica. July – August 2020.
3. **Erick Eduardo Hernández Guerrero**. XXVIII Verano de la Investigación Científica. July – August 2018.
4. **Carlos Michel Maldonado Holguín**. XXVIII Verano de la Investigación Científica. July – August 2018.
5. **Edgar Hernández Aguirre**. XXVIII Verano de la Investigación Científica. July – August 2018.

## Visiting Postgraduate Students

1. **Liseth Viviana Campos**. PhD Student from Ingeniería Telemática, Universidad del Cauca, Popayán, Colombia. June – August, 2019.

2. **Juan Manuel Fortuna Cervantes**. PhD Student from Instituto de Investigación en Comunicación Óptica. Universidad Autónoma de San Luís Potosí, México. February – July, 2019.
3. **Jose Pablo Sánchez Rodríguez**. PhD Student from Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Campus Estado de México, México. May – October, 2017.
4. **Nils Lowen**. Master Student from Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Campus Querétaro, México. June – December, 2015.

# Lecturing

## Lecturing Experience (INAOE)

1. **Advanced Topics in Robotics** (45 hours), May – July, 2023.
2. **Introduction to Robotics** (45 hours), January – May, 2023.
3. **Introduction to Robotics** (45 hours), January – May, 2022.
4. **Introduction to Robotics** (45 hours), January – May, 2021.
5. **Design and Analysis of Algorithms** (45 hours), August – December, 2020.
6. **Artificial Intelligence** (45 hours), August – December, 2020.
7. **Introduction to Robotics** (45 hours), January – May, 2020.
8. **Introduction to Robotics** (45 hours), January – May, 2019.
9. **Design and Analysis of Algorithms** (45 hours), August – December, 2018.
10. **Introduction to Robotics** (45 hours), January – May, 2018.
11. **Research Seminar 2** (45 hours), May-July, 2017.
12. **Formal Languages and Automata** – Preparatory course (24 hours), May – July, 2017.
13. **Artificial Intelligence** (45 hours), August – December, 2016.
14. **Research Seminar 2** (45 hours), May-July, 2016.
15. **Introduction to Robotics** (45 hours), January – May, 2016.
16. **Design and Analysis of Algorithms** (45 hours), August – December, 2015.
17. **Probabilistic Graphical Models** (45 hours), May – July, 2015.
18. **Formal Languages and Automata** – Preparatory course (10 hours), July, 2015.
19. **Introduction to Robotics** (45 hours), January – May, 2015.

## Other Lecturing Experience

1. Tutorial (4 hours): “Datos sintéticos para investigación en robótica aérea”. X Seminario y Escuela Nacional de Aprendizaje e Inteligencia Artificial. Organizado por el Instituto Nacional de Astrofísica, Óptica y Electrónica y la Red Temática en Inteligencia Computacional Aplicada. September 26th, 2022.
2. Tutorial (4 hours): “Localización Visual utilizando Aprendizaje Profundo para Drones y Robots Móviles”. Encuentro Nacional del Computación. 2022 IEEE Mexican International Conference on Computer Science. August 24th, 2022.
3. **Course** (24 hours): “Uso básico de ROS para control de robots móviles”. [Programa de Capacitación de Profesores \(PCP\) y Cursos de Actualización en las Disciplinas \(CADI\)](#). Formación Docente Profesional CEDDIE. Instituto Tecnológico y de Estudios Superiores de Monterrey. Puebla, Pue. México. July 25th – 27th, 2022.
4. **Course** (20 hours): “Introducción para Pilotaje de Drones”. Para elementos de los cuerpos de Seguridad Pública. [Secretaría de Seguridad Pública y Tránsito Municipal de Puebla](#). Puebla, México. Abril, 2022.
5. **Tutorial** (4 hours): “Sensado Remoto Utilizando Drones e Inteligencia Artificial Espacial”. Escuela de invierno de robótica (EIR) 2021-2022. Universidad Autónoma de Guadalajara. Federación Mexicana de Robótica. January, 2022.
6. **Tutorial** (4 hours): “Técnicas de Localización para Drones”. 8th National School on Learning and Applied Computational Intelligence. Organised by Instituto Tecnológico Nacional. Instituto Tecnológico de Veracruz and the Mexican Research Network on Applied Computational Intelligence. Mexico, September 28th, 2021.

7. **Tutorial** (4 hours): “Introducción a Ambientes de Simulación y Herramientas de Software para Drones Autónomos”. Escuela de Invierno de la Federación Mexicana de Robótica. Universidad Tecnológica del Sureste de Veracruz. México. January 7th, 2021.
8. **Tutorial** (4 hours): “Aprendizaje Profundo para Percepción en Drones”. 7th National School on Learning and Applied Computational Intelligence. Organised by the Mexican Research Network on Applied Computational Intelligence. Mexico, Septiembre 28th, 2020.
9. **Tutorial** (4 hours): “Técnicas avanzadas para drones inteligentes”. National Meeting of Computing. Organised by the Universidad Autónoma de Coahuila and the Mexican Society in Computer Science. Coahuila. Mexico, August 12th, 2020.
10. **Course** (20 hours): “Introducción para Pilotaje de Drones”. Para elementos adscritos al Centro de Estudios de Investigación en Seguridad Pública y Política Criminal. [Secretaría de Seguridad Pública y Tránsito Municipal de Puebla](#). Puebla, México. Octubre, 2019.
11. **Tutorial** (4 hours): “Visual Simultaneous Localisation and Mapping Techniques for Autonomous Unmanned Aerial Vehicles”. **National Congress of Automatic Control (CNCA)**. Benemerita Universidad Autonoma de Puebla and the Mexican Association in Automatic Control. Puebla. Mexico, October 22th, 2019.
12. **Tutorial** (4 hours): “Exhibición de drones y uso de software para simulación de drones”. 6th National School on Learning and Applied Computational Intelligence. Organised by the Faculty of Computer Sciences of the Benemérita Universidad Autónoma de Puebla and the Mexican Research Network on Applied Computational Intelligence. Puebla. Mexico, September 17th, 2019.
13. **Tutorial** (4 hours): “Uso de drones para el monitoreo, inspección y vigilancia de terreno”. **11º Congreso Mexicano de Inteligencia Artificial (COMIA)** 2019. Organised by Sociedad Mexicana de Inteligencia Artificial (SMIA), CICESE-UT y la Universidad Autónoma de Nayarit. Tepic, Nayarit. June 4th, 2019.
14. **Workshop** (6 hours): “Técnicas avanzadas para el vuelo autónomo de drones”. Escuela de Invierno de la Federación Mexicana de Robótica. Centro de Investigación en Computación del Instituto Politécnico Nacional. Ciudad de México. México. January 8th, 2019.
15. **Course** (40 hours): “Navegación autónoma de Drones”. [Programa de Capacitación de Profesores \(PCP\) y Cursos de Actualización en las Disciplinas \(CADI\)](#). Formación Docente Profesional CEDDIE. Instituto Tecnológico y de Estudios Superiores de Monterrey. Atizapan, Estado de México, México. June 25th – 29th, 2018.
16. **Tutorial** (3 hours): “Técnicas Básicas para Drones Autónomos y la Regulación de Drones”. 5th National School on Learning and Applied Computational Intelligence. Organised by the Instituto Tecnológico de Culiacán and the Mexican Research Network on Applied Computational Intelligence. Culiacan, Mexico, September, 2018.
17. **Tutorial** (8 hours): “Programming Drones with the Gazebo Simulator”. **28th International Conference on Electronics, Communications and Computers (CONIELECOMP)**, Universidad de las Américas. Puebla, México. February, 2018.
18. **Workshop** (8 hours, 2 groups): “Drones con ORB-SLAM y Gazebo”. Escuela de Invierno de la Federación Mexicana de Robótica. Casino Xalapeño. Xalapa, Veracruz. México. February, 2018.
19. **Workshop** (8 hours): “Drones Autónomos Utilizando el Ambiente de Simulación Gazebo”. 4th National School on Learning and Applied Computational Intelligence. Organised by the Universidad de Tlaxcala and the Mexican Research Network on Applied Computational Intelligence. Organised by the Centro Universitario de los Lagos and the Mexican Research Network on Applied Computational Intelligence. Lagos de Moreno, Mexico, September, 2017.

20. **Workshop** (6 horas). "Vuelo Autónomo en Ambientes sin GPS". **Taller en la Escuela de Invierno de Robótica. Federación Mexicana de Robótica.** Universidad Popular Autónoma del Estado de Puebla. Puebla, México. Enero, 2017.
21. **Tutorial** (6 horas). "Volando un dron mediante un programa de computadora". 3rd National School on Learning and Applied Computational Intelligence. Organised by the Universidad de Tlaxcala and the Mexican Research Network on Applied Computational Intelligence. Organised by the Universidad Michoacana de San Nicolás de Hidalgo and the Mexican Research Network on Applied Computational Intelligence. Michoacan, Mexico. September, 2016.
22. **Tutorial** (8 hours). "Control de drones utilizando el sistema Vicon". **8 Congreso Mexicano de Inteligencia Artificial (COMIA).** Puebla, México. May, 2016.
23. **Workshop** (8 hours). "Programación de Drones". 2nd National School on Learning and Applied Computational Intelligence. Organised by the Universidad de Tlaxcala and the Mexican Research Network on Applied Computational Intelligence. Tlaxcala, Mexico. October, 2015.
24. **Workshop** (8 hours): "Reconocimiento Visual de Objetos y Lugares Utilizando Unos Cuantos Bits". Taller en el **2do Congreso Internacional Tecnologías de la información y Comunicación.** Universidad Politécnica de Tlaxcala. Tlaxcala, México. September, 2013.

# Editorial & Review Activities

## Editorial Activities

1. **Associate Editor for IEEE IROS 2022, 2023.**
2. **Editor for the Unmanned Systems Journal.** January, 2022.  
**Special Issue on Selected Papers from IMAV 2021.**  
<https://doi.org/10.1142/S2301385022020010>
3. **Guest Editor for the International Journal of Micro Air Vehicles.**  
**Best Papers of the IMAV 2021.**  
<https://doi.org/10.1177%2F17568293221104967>
4. **Guest Editor for the Komputer Sapiens Magazine.** Mexican Society of Artificial Intelligence (SMIA in spanish). Special Issues on Aerial Autonomous Robotics. **Year 10, Volume III**, September-December, 2018; and **Year 11, Volume I**, January-April, 2019.  
<http://smia.mx/kompotersapiens/publicaciones.php#KSXI-I>  
<http://smia.mx/kompotersapiens/publicaciones.php#KSX-III>
5. **Poster Chair ISMAR 2016 Editorial.**  
<https://doi.ieeecomputersociety.org/10.1109/ISMAR.2016.7>
6. **BMVC 2013 Student Workshop Editorial.**  
<http://www.bmva.org/bmvc/2013/workshop.html>

## Reviewer in PhD Vivas

1. **External Reviewer in PhD Viva:** “Efficient Visual Ego - Motion Estimation for Agile Flying Robots”. Student: Yingfu Xu. Supervisor: Guido de Croon. **Delft University of Technology.** September, 7<sup>th</sup>, 2023.
2. **External Reviewer in PhD Viva:** “Fusión de Sensores Visuales e Inerciales para Navegación Autónoma de Cuatrirtores”. Student: **Ángel Alejandro Gómez Casasola.** Supervisor: Dr. Hugo Rodríguez Cortés. CINVESTAV Zacatenco. December 13th, 2022.
3. **External Reviewer in PhD Viva:** “Metodología de un sistema modular de assitencia a la conducción en ambientes todoterreno”. Student: **Ethery Ramírez Robles.** Supervisor: Dr. Oleg Starostenko Basarab. Universidad de las Américas Puebla. November 2nd, 2022.
4. **External Reviewer in PhD Viva:** “Implementation and application of the wavelet transform into deep learning techniques for texture classification and object detection”. Student: **Juan Manuel Fortuna Cervantes.** Supervisors: Dr. Marco Tulio Ramírez Torres, Dra. Marcela Mejía Carlos. Universidad de San Luis Potosí. August 30th, 2022.
5. **Reviewer in PhD Viva:** “Aprendizaje por Transferencia en Aprendizaje por Refuerzo Profundo”. Estudiante: **Jesús García Ramírez.** Supervisors: Dr. Eduardo Francisco Morales Manzanares, Dr. Hugo Jair Escalante Balderas. Instituto Nacional de Astrofísica Óptica y Electrónica. March 4th, 2022.
6. **External Reviewer in PhD Viva:** “Procedural generation of river deltas using L-Systems and C-GANS”. Estudiante: **Luis Oswaldo Valencia Rosado.** Supervisor: Oleg Starostenko Basarab. Universidad de las Américas-Puebla (UDLAP). March 24th, 2021.
7. **Reviewer in PhD Viva:** “Human Activities Recognition based on Second Order Motion Descriptors and a Two-Stream Architecture”. Estudiante: **Renier Oves García.** Supervisor:

- Enrique Sucar Succar. Instituto Nacional de Astrofísica Óptica y Electrónica. February 19th, 2021.
8. **Reviewer in PhD Viva:** "Partial Volume Segmentation in Magnetic Resonance Imaging (MRI)." Student: **Jonás Grande Barreto**. Supervisor: María del Pilar Gómez Gil. Instituto Nacional de Astrofísica Óptica y Electrónica. December 11th, 2020.
  9. **External Reviewer in PhD Viva:** "Visual Navigation and Optimal Control for Autonomous Drone Racing". Student: **Shuo Li**. Supervisor: Guido de Croon. **Delft University of Technology**. November, 12<sup>th</sup>, 2020.
  10. **Reviewer in PhD Viva:** "Deep Representation Learning with Genetic Programming". Student: **Lino Alberto Rodríguez Cuayahuitl**. Supervisor: Hugo Jair Escalante Balderas. Instituto Nacional de Astrofísica Óptica y Electrónica. July 13<sup>th</sup>, 2020.
  11. **Reviewer in PhD Viva:** "Detección y Localización de Manipulaciones de Ataques Espacio Temporales en Video Usando un Enfoque de Propósito General". Student: **Ernesto Aparicio Díaz**. Supervisor: René Cumplido Lindsey StirlingParra. Instituto Nacional de Astrofísica Óptica y Electrónica. February 27<sup>th</sup>, 2020.
  12. **Reviewer in PhD Viva:** "A high capacity and robust image-based watermarking technique for relational data." Student: **Maikel Lazaro Perez**. Supervisor: Claudia Feregrino Uribe. Instituto Nacional de Astrofísica Óptica y Electrónica. February 24<sup>th</sup>, 2020.
  13. **Reviewer in PhD Viva:** "Learning Causal Probabilistic Graphical Models and their application to the analysis of Effective Connectivity from functional Near InfraRed Spectroscopy". Student: **Samuel Antonio Montero Hernández**. Supervisor: Felipe Orihuela-Espina. Instituto Nacional de Astrofísica Óptica y Electrónica. January 30<sup>th</sup>, 2019.
  14. **External Reviewer in PhD Viva:** "Navegación autónoma de un dron hexacóptero con visión estereoscópica para mapeo y evasión de obstáculos en tiempo real." Estudiante: **José Pablo Sánchez Rodríguez**. Supervisor: Dr. Alejandro Aceves López. Escuela de Ingeniería y Ciencias. **Tecnológico de Monterrey**. Ciudad de México, México. November 26th, 2018.
  15. **Reviewer in PhD Viva:** "Image Reconstruction in Functional Optical Neuroimaging: The modelling and separation of the scalp blood flow". Student: **Javier Herrera Vega**. Supervisor: Felipe Orihuela-Espina. Instituto Nacional de Astrofísica Óptica y Electrónica. April 19<sup>th</sup>, 2018.
  16. **Reviewer in PhD Viva:** "Complex action recognition from human motion tracking using wearable". Student: **Irving Hussein López Nava**. Supervisor: Angélica Muñoz Meléndez. Instituto Nacional de Astrofísica Óptica y Electrónica. March 20<sup>th</sup>, 2018.
  17. **Reviewer in PhD Viva:** "Unsupervised image annotation as multimodal query expansion". Student: **Luis Pellegrin**. Supervisors: Hugo Jair Escalante Balderas. Instituto Nacional de Astrofísica Óptica y Electrónica. October 23<sup>th</sup>, 2017.
  18. **Reviewer in PhD Viva:** "Supervised classifiers based on emerging patterns for class imbalance problems". Student: **Octavio Loyola González**. Supervisors: José Francisco Martínez Trinidad y Milton García Borroto. Instituto Nacional de Astrofísica Óptica y Electrónica. October 17<sup>th</sup>, 2017.
  19. **External Reviewer in PhD Viva:** "Navegación basada en memoria visual para robots humanoides". Student: **Josefat Esau Delfin Marquez**. Supervisor: Gustavo Arechavaleta. Center for Research and Advanced Studies of the National Polytechnic Institute (**CINVESTAV**) Saltillo Unit. May 26<sup>th</sup>, 2017.
  20. **External Reviewer in PhD Viva:** "Automated real-time reconstruction of 3-D scenes using Conditional Markov random fields". Student: **Sergio Alejandro Mota Gutierrez**. Supervisor: Rogelio Hasimoto Beltrán, Jean-Bernard Hayet and Salvador Ruiz-Correa. Center for Research in Mathematics (**CIMAT**). April, 2015.

## Reviewer in Master in Research Vivas

1. **Reviewer in MSc Viva:** "A Lightweight Cryptographic Scheme to Provide Confidentiality and Integrity in a UAVs Swarm Centralized Architecture". Estudiante: **David Carcaño Ventura**. Supervisors: Dra. Lil María Xibai Rodríguez Henríquez, Dr. Saúl Eduardo Pomares Hernández. Instituto Nacional de Astrofísica Óptica y Electrónica. February 25th, 2022.
2. **Reviewer in MSc Viva:** "Compressive sensing algorithm embedded implementation for image reconstruction used in single-pixel cameras". Estudiante: **Andrés Mauricio Manjarrés García**. Supervisor: Dr. José de Jesús Rangel Magdaleno. Instituto Nacional de Astrofísica Óptica y Electrónica. Febrero 9, 2022.
3. **Reviewer in MSc Viva:** "Caracterización de masas en mamografías digitales". Estudiante: **José Antonio Sánchez Tiro**. Supervisor: Hayde Peregrina Barreto, Gabriela del Carmen López Armas. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. January 21st, 2022.
4. **Reviewer in MSc Viva:** "Deep Learning for visible-infrared image fusion and semantic segmentation of wildfire imagery". Estudiante: **Jorge Francisco Ciprián Sánchez**. Supervisor: Gilberto Ochoa Ruiz. Instituto Tecnológico de Estudios Superiores de Monterrey. November 22nd, 2021.
5. **Reviewer in MSc Viva:** "Incorporando Conocimiento Causal en Aprendizaje por Refuerzo". Estudiante: **Ivan Raymundo Feliciano Avelino**. Supervisors: Eduardo Morales Manzanares, Enrique Sucar Succar. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. February 17, 2021.
6. **Reviewer in MSc Viva:** "Clasificación de señales EEG basada en representaciones bidimensionales y redes neuronales convolucionales." **Edgar Moisés Hernández González**. Supervisor: María del Pilar Gómez Gil. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. December 10th, 2020.
7. **Reviewer in MSc Viva:** "Algoritmo de agrupamiento auto-organizado basado en SOM creciente para biometría con EEG." **Zurisaddai Sandoval Lara**. Supervisor: María del Pilar Gómez Gil. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. December 3rd, 2020.
8. **Reviewer in MSc Viva:** "Sistemas dinámicos hipercaóticos sincronizados para cifrado de imágenes." Estudiante: **Freddy Alejandro Chaurra Gutiérrez**. Supervisors: Gustavo Rodríguez Gómez, Claudia Feregrino Uribe. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. August 24th, 2020.
9. **Reviewer in MSc Viva.** "Jerarquización Automática de Procesos de Decisión de Markov Parcialmente Observables para la Planificación de Tareas en Robótica de Servicio". **Sergio Arredondo Serrano**. Supervisor: Enrique Sucar. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. November 12th, 2019.
10. **Reviewer in MSc Viva.** "Hierarchical Classification with Bayesian Networks and Chained Classifiers". **Jonathan Serrano Perez**. Supervisor: Enrique Sucar. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. November 6th, 2019.
11. **Reviewer in MSc Viva.** "Fusión de Información Multimodal para Detección de Engaño en Videos". **Rodrigo Rill García**. Supervisor: Hugo Jair Escalante Balderas, Luis Villaseñor Pineda y Verónica Reyes Meza. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. September 4th, 2019.
12. **Reviewer in MSc Viva.** "Human Body Pose Tracking Based on Spatio-Temporal Joints Dependency Learning". **Rodrigo Barrita Zebadúa**. Supervisor: Luis Enrique Sucar Succar. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. January 11th, 2019.

13. **Reviewer in MSc Viva.** "Learning Robotic Manipulation Tasks using Relational Reinforcement Learning and Human Demonstrations". **Arquímedes Méndez Molina**. Supervisor: Eduardo Morales Manzanares. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. November 13<sup>th</sup>, 2018.
14. **External Reviewer in MSc Viva.** "Localización Visual en robots de recursos computacionales limitados". **Matías Mattamala**. Supervisor: Javier Ruiz del Solar San Martín. Facultad de Ciencias Físico Matemáticas. **Universidad de Chile**. Santiago, Chile. August 14<sup>th</sup>, 2018.
15. **Reviewer in MSc Viva.** "Reconstrucción de Imágenes Foto Acústicas de Metales Originadas en un Medio Multicapas". **Irving Caballero**. Supervisor: Leopoldo Altamirano Robles. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. February 28<sup>th</sup>, 2018.
16. **Reviewer in MSc Viva.** "Control de Movimiento y Planificación de un Robot Esférico". **Martín Luna Cordova**. Supervisor: Gustavo Rodríguez Gómez; Angélica Muñoz Meléndez. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. February 27<sup>th</sup>, 2018.
17. **Reviewer in MSc Viva.** "Image authentication scheme and its hardware architecture using watermarking and visual cryptography". **Ángel Hernández Joaquín**. Supervisor: René Cumplido Parra. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. February 19<sup>th</sup>, 2018.
18. **Reviewer in MSc Viva.** "Error concealment method for HEVC based on motion vector redundancy". **Domingo Guzmán Estrada**. Supervisor: Claudia Feregrino Uribe y Alicia Morales Reyes. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. February 15<sup>th</sup>, 2018.
19. **Reviewer in MSc Viva.** "Granular fuzzy model with hyperboxes for facial expression recognition". **Eduardo Morales Vargas**. Supervisor: Carlos Alberto Reyes García y Hayde Peregrina Barreto. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. February 15<sup>th</sup>, 2018.
20. **External Reviewer in MSc Viva.** "Implementación de un Algoritmo de Localización y Mapeo Simultáneo en un Cuadrirotor". **Victor Hugo Cruz Sánchez**. Supervisor: Hugo Rodríguez Cortés. Centro de Investigación y Estudios Avanzados del Instituto Nacional del Instituto Politécnico Nacional (**CINVESTAV**). February 26<sup>th</sup>, 2017.
21. **Reviewer in MSc Viva.** "Reconocimiento de acciones humanas en caminos vehiculares de zonas urbanas". **Ariel Esau Ortiz Esquivel**. Supervisor: Leopoldo Altamirano Robles. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. January 20<sup>th</sup>, 2017.
22. **Reviewer in MSc Viva.** "Modelo Flexible de Movimiento de Torso, Brazo, Antebrazo y Muñeca". **Victor Lobatos Ríos**. Supervisor: Angélica Muñoz Meléndez. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. November 29<sup>th</sup>, 2016.
23. **Reviewer in MSc Viva.** "Azcatl: A Bio-inspired data foraging mechanism based on indirect communication in mobile sensor networks for dynamic environments". **Josué Castañeda Cisneros**. Asesor: Saúl Eduardo Pomares Hernández. Instituto Nacional de Astrofísica Óptica y Electrónica. Coordinación de Ciencias Computacionales. November 22<sup>nd</sup>, 2016.

## Participation in Government and Other Advisory Panels

1. Reviewer of 1 grant proposal for Reviewer of 1 grant proposal for European partnership Biodiversa+ 2022. Call "Improved transnational monitoring of biodiversity and ecosystem change for science and society (Biodivmon). May 31st, 2023.

2. Round Open technologie programma OTP 2022 of the NWO, Dutch Research Council. June 24th, 2022.
3. Reviewer of **2 academic programs** for the Mexican National Council of Science and Technology of Mexico: PNPC (Programa Nacional de Posgrados de Calidad) National Program for High-Level Quality Postgraduate Programs 2021. October, 2021.
4. Committee member for IEEE ICRA Best Unmanned Aerial Vehicle Paper Award, 2021.
5. Reviewer of 1 project approved in the call: "2018-01 Centro Mexicano de Innovación en Redes y Microrredes Eléctricas Inteligentes". CONACYT-SENER-Sustentabilidad Energética. Augus, 2021.
6. Reviewer of **1 grant project proposal** for the Call: Convocatoria 2020 del Acuerdo México-Francia SEP-CONACYT-NAUIES-ECOS Nord Francia. February 22nd, 2021.
7. Member of committee for the evaluation of **1 academic program**: "Evaluación de Réplicas de la Convocatoria de Renovación 2020 del Programa Nacional de Posgrado de Calidad, CONACYT". February 16th, 2021. Hyunchul Shim
8. Reviewer of **1 project** for the Council of Science and Technology of the Puebla State: National Fair of Science and Engineering 2018.
9. Reviewer of **1 grant proposal** for the Mexican National Council of Science and Technology of Mexico: National Problems 2017 Grant Call.
10. Reviewer of **2 Programs** for the Mexican National Council of Science and Technology of Mexico: PNPC (Programa Nacional de Posgrados de Calidad) National Program for High-Level Quality Postgraduate Programs 2017.
11. Reviewer of **4 grant proposals** for the Mexican National Council of Science and Technology of Mexico: PEI (Programas de Estímulo a la Innovación) Program for Support to Innovation 2017 Grant Call.
12. Reviewer of **2 grant proposals** for the Mexican National Council of Science and Technology of Mexico: Basic Science 2017 Grant Call.
13. Reviewer of **2 grant proposals** for the Mexican National Council of Science and Technology of Mexico: National Problems 2016 Grant Call.
14. Reviewer of **3 projects** for the Council of Science and Technology of the Puebla State: National Fair of Science and Engineering 2017.

## Participation as Reviewer in International Conferences and Journals

Since 2012 to date, I have been a regular reviewer for international conferences (ICRA, IROS, BMVC, RED-UAS, ICUAS, IMAV, NeurIPS, MICAI, CoDIT, MCPR, ETFA, IBERAMIA) and international journals (IEEE Robotics and Automation Letters, IEEE Transactions on Robotics, Robotics and Autonomous Systems, Autonomous Robots, Intelligent and Robotic Systems, Adaptive Behaviour, IEEE Transactions on Industrial Electronics, IET Computer Vision, IET Image Processing, Pattern Recognition Letters, Pattern Recognition, Machine Vision and Applications, Multimedia Tools and Applications, Aerospace Engineering, Transactions on Parallel and Distributed Systems, Circuits, Systems and Computers, Real-Time Image Processing, Image and Vision Computing, Open Automation and Control Systems, Computers, Sensors, Robotica, Applied Sciences, IEEE Access, NeuroComputing, Engineering Applications of Artificial Intelligence).

Recently, I began using Web of Science to register some of my reviews (whenever possible). See my profile here:

<http://www.webofscience.com/wos/author/record/Y-1190-2019>

# Event Organiser

## Organiser of International Scientific Events

1. **General Chair:** [Taller Nacional de Drones Inteligentes \(National Workshop on Intelligent Drones\)](#). October, 2023.
2. **Area Chair (Robotics. Computer vision):** [Ibero-American Conference on Artificial Intelligence IBERAMIA 2022](#). November, 2022.
3. **Member of the Organising Committee:** [IROS 2022 Safe Robot Learning Competition](#). October, 2022.
4. **General Chair:** [International Micro Air Vehicle Conference and Competition \(IMAV\) 2021](#). Puebla, México. June/July, 2021.
5. **Track Chair:** [Mexican International Conference on Artificial Intelligence](#). Xalapa, Mexico. October, 2019.
6. **Track Chair:** [Mexican International Conference on Artificial Intelligence](#). Guadalajara. Mexico. October, 2018.
7. **Track Chair:** [Mexican International Conference on Artificial Intelligence](#). Ensenada, Mexico. November, 2017.
8. **Chair:** [International Workshop on Vision and Control for Autonomous Drones](#). Puebla, Mexico. February, 2017.
9. **Poster Chair:** [International Symposium on Mixed and Augmented Reality \(ISMAR\)](#). Merida, Mexico. September, 2016.
10. **Co-Chair:** [ICT for a Brighter Future Workshop – Present Solutions to Pressing Problems: Case LAC-EU](#). Puebla, Mexico. October, 2015.
11. **Chair:** [British Machine Vision Student Workshop](#). Bristol, UK. September, 2013.

# Others

## Memberships to Scientific Organisations

1. Royal Society-Newton Advanced Fellowship in the UK, (2015-2018).
2. Member of the National System of Researchers in Mexico, Level C (2017-2019), Level 1 (2020-2022).
3. IEEE Member. RAS Society Member.
4. Regular Member of the Mexican Computing Academy.
5. 1<sup>th</sup> Vocal Member of the Board of Directors of the Mexican Robotics Federation.
6. Member of the Research Network on Applied Computational Intelligence in Mexico.

## Other Activities

1. Representative of the Computer Science Department before the Academic Staff College and a member of the Internal Technical Advisory Board of the Instituto Nacional de Astrofísica Óptica y Electrónica. October 2017 to October 2021.

2. Representative of the Computer Science Department before the Science Communication Committee of the Instituto Nacional de Astrofísica Óptica y Electrónica. October 2017 to December 2021.
3. Participation in the IROS2018 Autonomous Drone Racing competition. IEEE International Conference on Robotic Systems. Madrid, Spain. October, 2018.
4. Participation as a Team Member of the INAOE Team in the Autonomous Mini racing. Instituto Politecnico Nacional. Mexico City, Mexico. April, 2017.
5. Participation in the IMAV 2017, Indoors Competition. Toulouse, France. September, 2019. INAOE's team, QuetzalC++, ranked 4<sup>th</sup> in the competition.