



Announcement of four Tenure Track Research Positions in the Computer Science Department of the *Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE)*, Tonantzintla, Puebla, Mexico

The *Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)*¹ is a federally funded public research center in the state of Puebla, Mexico, dedicated to basic and applied research. It offers graduate programs in Astrophysics, Optics, Electronics, Computer Science, Space Science and Technology and Biomedical Technology, accredited by the “*Sistema Nacional de Posgrados (SNP)*”² of the CONACyT³. INAOE provides an intellectually stimulating work environment, undertaking state-of-the-art research as well as high quality technological development and certified quality graduate courses.

INAOE is one of the most recognized Public Research Centers in Mexico and its Department of Computer Science (CCC) is among the most prominent leaders in computer research in Mexico, with 28 full-time researchers, all members of the National System of Researchers. The CCC offers Master's and PhD studies included in the SNP in the category of Internationally Competent, for which our students have the benefit of scholarships for postgraduate studies. This announcement offers the opportunity to join the research group in the Department of Computer Science of INAOE to four researchers highly motivated and with demonstrable experience in one of the following areas: Robotics, Bio-signal Processing and Medical Computing, Computer Vision, Language Technologies and Next Generation Computing.

Based on INAOE's General Director's attributes, established in Article 20, Section I, of the “Decree by which the *Instituto Nacional de Astrofísica, Óptica y Electrónica* is Restructured”, and aiming at finding the best candidates to fill these positions, while efficiently contributing to meet institutional goals, the INAOE hereby invites all those professionals, Mexican or foreign, who would like to earn the position of Senior Researcher for an initial one year period, as stated in Article 24, Section I, of the Faculty Statute of the INAOE, to undertake scientific and technological research, as well as technological innovation associated to the needs of different social sectors, and prepare high quality human resources through graduate studies, to apply for one of these positions according to the following

Terms

I. Academic Background

A doctoral degree or equivalent in Computer Science or related areas and a successful research career with publications in the best international conferences and journals in their area of specialty, with a focus on research and development in any of the following areas: Robotics, Bio-signal Processing and Medical Computing, Computer Vision, Language Technologies or Next Generation Computing.

¹ National Institute for Research on Astrophysics, Optics and Electronics

² A registry of accredited graduate programs issued by CONACyT

³ The National Council for Science and Technology





II. Candidate's Profile

Selected candidates must contribute to the advancement of INAOE's Computer Science Department developing research projects with external funding, contributing to the activities of our postgraduate programs, establishing academic and research collaborations with other researchers of the department and of other areas at INAOE. The CCC is especially interested in candidates that can contribute, through research and training of human resources, to the diversity and excellence of our academic community. They must also have excellent teamwork and communication skills. It is equally desirable that the candidate belongs to the National System of Researchers (SNI) or has an academic profile that allows them to enter the SNI in a short time. Experience in projects with the industry is a plus. Candidates must have the following specific knowledge according to their specialty area:

- 1) *Robotics*: a strong background and experience in the computational aspects of robotics, in one or more of the following subareas: control, motion planning, manipulation, navigation, learning, and cognitive robotics.
- 2) *Bio Signals Processing and Medical Computing*: expertise in the modern techniques for signal and image processing, in particular deep learning, and its application to bio signals and medical images. Knowledge of affective computing, cognitive science, computational neuroscience, *e-Health*, telemedicine, BCI, linguistic signals, and neuroimage analysis, will be also appreciated.
- 3) *Computer Vision*: experience and proven knowledge in computer vision and digital image processing research and applications. Experience in the use of Machine Learning and Deep Learning techniques is desirable. Applications are sought in any of the areas of computer vision, with particular emphasis on biomedical applications, security, signal processing, and embedded computing.
- 4) *Language Technologies*: excellent and proven knowledge of deep learning techniques and their application to natural language processing or computational linguistics, for the analysis of text or speech. Experience in sequential models and transformers is expected; prior work on deep learning models for multimodal information processing is a plus. Other areas of interest include human-machine interaction (in particular, Multimodal HCI or Emotion Analysis in HCI) or novel methods in the intersection of computational linguistics and signal processing (addressing the treatment of human language including the various forms of emitted biosignals, such as paralinguistic features of speech, the posture and facial gestures of the speaker, or the brain signal emitted during an interaction).
- 5) *Next Generation Computing*: strong background in the fundamentals of analysis and design of algorithms, computer architectures, simulation techniques, mathematical modeling, computer security, and parallel and concurrent computing. Suitable experience in cybersecurity, next-generation networks, parallel architectures, and cyber-physical systems.

III. Job Description

The selected candidates must:

- Perform high quality, original research in his/her area of expertise, working in a team.





- Publish the results of their research activities in top-of-the-line conferences and the highest ranked refereed journals in their field;
- Collaborate with all the other members of the faculty, as well as other researchers in the INAOE;
- Teach high quality and high-level graduate courses, especially those of the programs of the Electronics Department;
- Supervise master's theses and doctoral dissertations;
- Serve as a reviewer of theses and dissertations directed by colleagues;
- Fulfill the administrative tasks related to the position;
- Participate in the different activities of the Institute.

IV. Additional considerations

- Availability to live in or nearby the city of Puebla, Mexico.
- A positive attitude when confronted with challenges, and to work in general.
- A high sense of responsibility.
- Willingness to work in a team.
- Foreign nationals should be in possession of required legal documents to allow them to work and perform the duties herein established.

V. Deadline for application and procedure

The candidates aspiring to obtain the position of Tenure Track Researcher under this announcement, must present:

- A letter stating their motivation to work in INAOE.
- A research project proposal for the middle run (3 years), in less than five pages, including personal professional development goals, academic, and scientific and technological development aims, highlighting the main foreseen scientific contributions, and indicating how they will integrate with the existing faculty of the Electronics Department.
- A résumé with evidential documents.
- Copies of their three most relevant publications.
- Contact information of three researchers of worldwide prestige that could be asked to provide a letter of recommendation of the candidate in digital form.

All the documents must be delivered or sent by **November 30, 2021**, to:

Dirección de Investigación y Desarrollo Tecnológico

Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE)

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For questions related to this call, please contact Dr. Jesús Ariel Carrasco Ochoa, Head of the Computer Science Department, at the following e-mail address: ariel@inaoep.mx.





All applications will be reviewed by a committee consisting of personnel from the Computer Science Department, who will program interviews with them through the Research and Development Directorate. The opinion of this committee will be considered by the General Director of the INAOE, who will, in case all the requirements established in Article 24, Section I, of the Faculty Statute of the INAOE are fulfilled, grant the position to the selected candidate. These positions will remain open until they are satisfactorily filled.

VI. Additional Information

Let it be known that once the one-year period established in this announcement for the selected candidates comes to an end, they can apply for permanence, promotion and tenure, based on the Faculty Statute of the INAOE and all the other pertinent regulations. All offered positions are full-time, with a position and salary in accordance with the academic trajectory of each candidate. The position includes the following fringe benefits besides salary: Social Security for the researcher and his/her immediate family, sick leave, paid vacation after six months of work, and a retirement package. Based on internal regulations, selected candidates will be offered a temporary contract, which will be reviewed at the end of the first and third years. The initial position is the equivalent to an Associate Professor in the United States. Besides the salary and benefits, the researchers in the INAOE can qualify for an additional stipend based on a merit scale. They can also apply to become part of the SNI and receive a monthly fellowship in case of meeting the requirements. As part of their benefits, the researchers can apply for a three-month paid leave every year to collaborate with other academic institutions, as well as to enjoy a paid sabbatical leave after a period of six years of uninterrupted work.

