

# Francisco Javier López Tiro

✉ francisco.lopez@ieee.org

🌐 <https://friscolt.github.io>

🐦 @friscolt

📞 (+52) 22 26 65 54 83

🗣️ Spanish (mother tongue), English (B2), French (A2)



## Education

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- Feb 2022 – Jan 2026    **Ph.D. in Computer Sciences,**  
\*Instituto Tecnológico y de Estudios Superiores de Monterrey  
\*\*Université de Lorraine  
Thesis: *“Automatic real-time identification of kidney stones and their composition from ureteroscopic images using deep learning and computer vision techniques” / “Identificación automática en tiempo real des calculs rénaux et de leur composition à partir d’images urétéroscopiques à l’aide de techniques d’apprentissage profond et de vision par ordinateur”.*  
Supervisors: \*Gilberto Ochoa-Ruiz and \*\*Christian Daul
- Aug 2017 – Nov 2019    **M.Sc. in Biomedical Sciences and Technologies,**  
Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE),  
Biosignals and Medical Computing Laboratory  
Thesis: *“Visualization of Blood Vessels in Contrast Images based on the Decomposition of the Discrete Wavelet Transform” / “Visualización de vasos sanguíneos en imágenes de contraste basado en la descomposición de la transformada wavelet discreta”.*  
Supervisors: Hayde Peregrina-Barreto, and José de Jesús Rangel-Magdaleno
- Aug 2011 – May 2015    **B.E. in Mechatronics Engineering,**  
Universidad Politécnica de Puebla,  
Thesis: *“Modernization of the Propulsion Control and Monitoring of Ships of the Mexican Navy” / “Modernización del control de propulsión y monitoreo de buques de la Armada de México”.*  
Supervisor: Salvador Antonio Arroyo-Díaz

## Scientific outreach

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- Jun 6 – Oct 3, 2023    **General and Logistics Chair,** LatinX in CV (LXCV) at the 2023 International Conference of Computer Vision (ICCV).
- Jan 3 – Jun 18, 2023    **Mentoring Chair,** LatinX in CV (LXCV) at the 2023 Computer Vision and Pattern Recognition (CVPR).
- Jun 3 – Oct 24, 2022    **Public Relations and Website Chair,** LatinX in CV (LXCV) at the 2022 European Conference of Computer Vision (ECCV).

## Scientific outreach (continued)

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- Jun 19, 2022    **Volunteer**, LatinX in CV (LXCV) at the 2022 Conference on Computer Vision and Pattern Recognition (CVPR).
- Oct 11, 2021    **Volunteer**, LatinX in CV (LXCV) at the 2021 International Conference of Computer Vision (ICCV)
- Jun 19, 2021    **Volunteer**, LatinX in CV (LXCV) at the 2021 Conference on Computer Vision and Pattern Recognition (CVPR).
- May 10-11, 2018    **Volunteer**, Seminario Nacional de Ciencias y Tecnologías Biomédicas. Instituto Nacional de Astrofísica, Óptica y Electrónica. Puebla, Mexico.
- Jan 2015 – Apr 2015    **Resident**, Instituto de Investigación y Desarrollo Tecnológico de la Armada de México (INIDETAM), Secretaría de Marina (SEMAR). Veracruz, México

## Employment

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- Feb 2023 – Today    **Lecturer** at Instituto Tecnológico y de Estudios Superiores de Monterrey. School of Engineering and Sciences. Analysis of biomedical signals and systems.
- Sep 2022 – Dec 2022    **Teaching assistant** at Instituto Tecnológico y de Estudios Superiores de Monterrey. School of Engineering and Sciences.
- Nov 2019 – Now    **Research assistant** at Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE). Department of Biomedical Sciences and Technologies. School of Engineering and Sciences.
- Aug 2020 – Dec 2021    **Lecturer** at Universidad Tecmilenio. Robotics, and head coach of EARTH 4723 robotics team.  
  
**Lecturer** at Universidad de los Ángeles. Instrumentation and control, mechatronic design, electricity and magnetism, and numerical programming.
- Aug 2015 – May 2017    **Lecturer** at Universidad de los Ángeles. Signal processing, instrumentation and control, digital electronics, mechatronic design, circuit analysis and robotics.  
  
**Lecturer** at Colegio de Educación Profesional Técnica del Estado de Puebla. Physics, mathematics, electronics and metrology. Head coach of F1 in Schools team.

# Publications

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## Journal

- \*Nov 2021    ■ “On the in vivo recognition of kidney stones using machine learning”. F. Lopez-Tiro, V. Estrade, G. Ochoa-Ruiz, D. Flores-Araiza, M. Gonzalez-Mendoza, J. Hubert, and C. Daul. *Bioengineering*. (\*Accepted Jun, 2023).
  
- Aug 2021    ■ “Visualization of blood vessels in in-vitro raw speckle images using an energy-based decomposition criteria on DWT coefficients”. F.J. Lopez-Tiro, H. Peregrina-Barreto, J.J. Rangel-Magdaleno and J.C. Ramirez-San-Juan. *Biomedical Signal Processing and Control*, 2021.

## Selected conference works

- \*Sept 6–9, 2022    ■ “Improved Kidney Stone Recognition Through Attention and Multi-View Feature Fusion Strategies”. E. Villalvazo-Avila, F. Lopez-Tiro, J. El-Beze, J. Hubert, M. Gonzalez-Mendoza, G. Ochoa-Ruiz, and C. Daul. *20th IEEE International Symposium on Biomedical Imaging (ISBI), 2023*. (\*Accepted Jan, 2023).
  
- \*Oct 24–29, 2022    ■ “On the generalization capabilities of FSL methods through domain adaptation: a case study in endoscopic kidney stone image classification”. M. Mendez-Ruiz, F. Lopez-Tiro, D. Flores-Araiza, J. El-Beze, G. Ochoa-Ruiz, M. Gonzalez-Mendoza, J. Hubert, A. Mendez-Vazquez, C. Daul. *2022 Mexican International Conference on Artificial Intelligence (MICAI), 2022*.
  
- Oct 31 – Nov 04, 2021    ■ “Assessing deep learning methods for the identification of kidney stones in endoscopic images”. F. Lopez, A. Varela, O. Hinojosa, M. Mendez, D.H. Trinh, J. ElBeze, J. Hubert, V. Estrade, M. Gonzalez, G. Ochoa, and C. Daul. *43rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2021*.
  
- May 17–20, 2021    ■ “Localization of Blood Vessels in in-vitro LSCI Images with K-Means”. F. Lopez-Tiro, H. Peregrina-Barreto, J. Rangel-Magdaleno and J.C. Ramirez-San-Juan. *IEEE International Instrumentation and Measurement Technology Conference (I2MTC), 2021*.
  
- May 25–28, 2020    ■ “Effect of the Exposure Time in Laser Speckle Imaging for Improving Blood Vessels Localization: a Wavelet Approach”. F. Lopez-Tiro, H. Peregrina-Barreto, J. Rangel-Magdaleno, J.C. Ramirez-San-Juan and J.M. Ramirez-Cortes. *IEEE International Instrumentation and Measurement Technology Conference (I2MTC), 2020*.

## Publications (continued)

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- May 20–23, 2019    ■ “Visualization of in-vitro Blood Vessels in Contrast Images Based on Discrete Wavelet Transform Decomposition”. F. Lopez-Tiro, H. Peregrina-Barreto, J. Rangel-Magdaleno and J.C. Ramirez-San-Juan. *IEEE International Instrumentation and Measurement Technology Conference (I2MTC)*, 2019.