Milton O. Candela-Leal

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miltoncandela.github.io

EDUCATION

Tecnológico de Monterrey   *Monterrey, Mexico*
BS in Biomedical Engineering (GPA = 95/100 = 3.8/4.0)   2020 - Dec 2024
  - Graduated with highest honors (*Summa Cum Laude*, top 5% of class)
  - Top graduate in professional development (*Borrego de Oro*, 1/1500)

RESEARCH EXPERIENCE

Houston Methodist   08/2025 - *Present*
Research Assistant I
Supervisor: Prof. Dimitry G. Sayenko, PhD
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Tecnologico de Monterrey   03/2021 - 07/2023, 08/2024 - 07/2025
Research Assistant
Supervisor: Prof. Mauricio A. Ramírez-Moreno, PhD
  - Cognitive state decoding using ML on multi-modal biometrics (EEG, PPG/EDA)
  - Force and acceleration prediction through RNN from pose-estimated keypoints
  - Autonomous driving and HCI systems via multi-sensor (Camera, Radar, LiDAR)
  - Engineering education through project-based learning and research simulators
  - Designed a project: Influence of auditive noise in chess learning environments
  - 1 grant with six universities on three continents via U21 Health Sciences Group
  - 5 journal papers, 2 book chapters, 8 conf. proceedings, +10 intl. presentations

Boston Children's Hospital   08/2023 - 07/2024
Research Intern
Supervisor: Prof. Kiho Im, PhD
  - Fetal brain (sub)cortical MRI segmentation through attention-gated CNN U-Net
  - Congenital disorder prediction via fetal brain features (volumetric, morphological)
  - 2 first-author presentations, 4 co-author presentations

University of Houston   01/2022 - 06/2022
Research Intern
Supervisor: Prof. Jose L. Contreras-Vidal, PhD
  - Gaze influence on actors' synchronicity through EEG bispectrum and FC analysis
  - 1 co-author presentation

SELECTED PUBLICATIONS

(* indicates equal contribution)

Candela-Leal, M.O., Martínez-Hernández, A., Moreno-Salazar, I.E. et al. (*in prep*). Enhanced Real-Time EEG-based Emotion Recognition using an Spherical VAD Model.

Gondová, A., Zhang, J., ..., **Candela-Leal, M.O.** *et al.* (*submitted*). Typical Development of the Human Fetal Subplate: Regional Heterogeneity, Growth, and Asymmetry Assessed by *in vivo* T2-weighted MRI.

Candela-Leal, M.O., Wong-Cantú, C.G., Arceo, A. et al. (*submitted*). Brain–Body Dynamics in Dance Improvisation: Effects of Emotion and Immersion.

Candela-Leal, M.O., Marrufo-Franco, L.A., Ruiz-de-la-Fuente, B.H. et al. (2025). Closed-Loop Haptic Neurofeedback BCI for Real-Time Student Attention Regulation. In Proceedings of the *XLVIII National Congress of Biomedical Engineering*. Monterrey, Mexico: Springer

Candela-Leal, M.O., Ramírez-Moreno, M.A., & Lozoya-Santos, J.J. (2025). Task Resolution Time Estimation through Cognitive Load: An EEG Study of Chess Players. In Proceedings of the *47th Annual Meeting of the Cognitive Science Society (CogSci)*. San Francisco, CA: eScholarship. [URL]

Blanco-Ríos, M.A.*, **Candela-Leal, M.O.***, Orozco-Romo, C. *et al.* (2024). Real-time EEG-based Emotion Recognition for Neurohumanities: Perspectives from Principal Component Analysis and Tree-based Algorithms. *Frontiers in Human Neuroscience*, 18, 1319574. doi:10.3389/fnhum.2024.1319574. PubMed PMID:38545515 **(editor's choice, 2024)**

Candela-Leal, M.O., Martínez-Díaz, D., Orozco-Romo, C. *et al.* (2023). Biomechanics Digital Twin: Markerless Joint Acceleration Prediction Using Machine Learning and Computer Vision. In Proceedings of the *Future of Educational Innovation-Workshop Series: Data in Action*. Monterrey, Mexico: IEEE. doi:10.1109/IEEECONF56852.2023.10104757

Candela-Leal, M.O., Gutiérrez-Flores, E.A., Presbítero-Espinosa, G. *et al.* (2022). Multi-Output Sequential Deep Learning Model for Athlete Force Prediction on a Treadmill Using 3D Markers. *Applied Sciences*, 12(11), 5424. doi:10.3390/app12115424

Ramírez-Moreno, M.A., Carrillo-Tijerina, P., **Candela-Leal, M.O.** *et al.* (2021). Evaluation of a Fast Test Based on Biometric Signals to Assess Mental Fatigue at the Workplace—A Pilot Study. *International Journal of Environmental Research and Public Health*, 18(22), 11891. doi:10.3390/ijerph182211891. PubMed PMID:34831645

Candela-Leal, M.O., García-Briones, J.M., Olivas-Martínez, G. *et al.* (2021). Real-time Biofeedback System for Interactive Learning using Wearables and IoT. In Proceedings of the 6th *International Conference on Industrial Engineering and Operations Management*. Monterrey, Mexico: IEOM. doi:10.46254/NA06.20210487 **(best undergraduate paper award)**

Olivas-Martínez, G., **Candela-Leal, M.O.**, Ocampo-Alvarado, J.C. *et al.* (2021). Detecting Change in Engineering Interest in Children through Machine Learning using Biometric Signals. In Proceedings of the *Machine Learning-Driven Digital Technologies for Educational Innovation Workshop*. Monterrey, Mexico: IEEE. doi:10.1109/IEEECONF53024.2021.9733772

INVITED TALKS

Invited Lecturer, Educational Research Seminar, Universidad José Martí	Jun 2025
Panelist, Biomedical Engineering Week, Tecnologico de Monterrey	May 2025
Panelist, NeuroTalks@Tec: Meet the Experts, Tecnologico de Monterrey	Mar 2025
Guest Lecturer, Cognitive Neuroscience Seminar, Tecnologico de Monterrey	Sep 2024
Invited Lecturer, Computing Seminar, UANL	Apr 2023

INTERNATIONAL PRESENTATIONS (*DENOTES CO-AUTHOR PRESENTING)

Oral, *IINAA* $\times 2$ (Houston, TX, 2025), *U21 HSG Annual Meeting* (Amsterdam, Netherlands, 2024), and *FNNDSC Research Symposium* $\times 3$ (Boston, MA, 2024)

Posters, *NDiSTEM* (Columbus, OH, 2025), 47th *CogSci* (San Francisco, CA, 2025), 31st *OHBM Annual Meeting** $\times 2$ (Brisbane, Australia, 2025), 27th *MICCAI** (Marrakesh, Morocco, 2024), 19th *IEEE-EMBS BSN* (Boston, MA, 2023), *BRAIN Annual Meeting* $\times 3$ (Phoenix, AZ, 2023), *BRAIN Annual Meeting* $\times 2$ (Houston, TX, 2022), 43rd *IEEE-EMBC** $\times 2$ (Virtual, 2021), and *BRAIN Annual Meeting* $\times 3$ (Virtual, 2021)

HONORS AND AWARDS

Editor's Choice Selection, Frontiers in Human Neuroscience [eBook]	2025
Top 3% of 2024 papers (16/510) based on quality.	
Summa Cum Laude, Tecnológico de Monterrey	2024
Top 5% of the graduating class (highest academic honors).	
Borrego de Oro, Tecnológico de Monterrey [newsletter]	2024
Top graduate in professional development, among $\sim$1,500 Fall 2024 graduates.	
Excellence Diploma, Tecnológico de Monterrey	2024
International Diploma, Tecnológico de Monterrey	2024
Student Speaker Award, U21 Health Sciences Group [newsletter]	2024
One of the two teams that won funding ($1600 USD) to present at U21 HSG '24, selected from MSc/BSc research projects across 21 universities on all continents.	
Outstanding Student Award, Tecnológico de Monterrey	2023, 2024
Top 1% of engineering students (80/8000) with the most outstanding trajectories.	
1st Place - Undergraduate Student Paper Competition, 6th North American IEOM	2021
1st Place - R&D Improvement Proposals ($250 USD), 18th Conexión Tec	2021
Academic Talent Scholarship, Tecnológico de Monterrey	2020

Last Update: August 2025