

# Milton Osiel Candela Leal

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## EDUCATION

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- Tecnológico de Monterrey** - Monterrey, Mexico 2020 - 2024  
B.S. in Biomedical Engineering (94.5/100 = 3.8/4.0 GPA)
- International Baccalaureate** - Monterrey, Mexico 2018 - 2020  
Math HL, Psychology SL, Physics SL, ...  
Thesis: *Harry Potter and the Prisoner of Azkaban* (2004), a Cultural and Ideological Instructor of the Millennial Viewer

## RESEARCH EXPERIENCE

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- Tecnológico de Monterrey** - Monterrey, Mexico 2021 - 2024  
Advisor: Mauricio A. Ramírez-Moreno, Ph.D.  
Project: *Advanced Learner Assistance System (ALAS)*  
*Talent and Passion Detection Through Biometrics*  
*Biomechanics for the Digital Twin*  
*NeuroHumanities Laboratory*
- Boston Children's Hospital** - Cambridge, MA, USA 2023 - 2024  
Advisor: Kiho Im, Ph.D.  
Project: *Automated Fetal Diffusion MRI Pipeline*
- University of Houston** - Houston, TX, USA S 2022  
Advisor: Jose L. Contreras-Vidal, Ph.D.  
Project: *Your Brain on Art: Understanding the Brain in Creative Action*

## JOURNAL ARTICLES

- 
- Candela-Leal, M.O.**, Gutiérrez-Flores, E.A., Presbítero-Espinosa, G., Sujatha-Ravindran, A., ... & Ramírez-Moreno, M.A. (2022). Multi-Output Sequential Deep Learning Model for Athlete Force Prediction on a Treadmill Using 3D Markers. *Applied Sciences*, 12(11), 5424. [paper]
- Ramírez-Moreno, M.A., Carrillo-Tijerina, P., **Candela-Leal, M.O.**, Alanis-Espinosa, M., ... & Lozoya-Santos, J.J. (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 [paper]
- Blanco-Ríos M.A.†, **Candela-Leal M.O.†**, Orozco-Romo C., Remis-Serna P., ... & Ramírez-Moreno M.A. (*in press*). Real-time EEG-based Emotion Recognition Model using Principal Component Analysis and Tree-based Models for Neurohumanities. *Frontiers in Human Neuroscience*
- Candela-Leal M.O.**, & Ramírez-Moreno M.A. (*in prep*). Creativity-related differences on EEG Brain Functional Connectivity Patterns among young Students during STEM Courses. *Thinking Skills and Creativity*

## BOOK CHAPTERS

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- Lozoya-Santos, J.J., Ramírez-Moreno, M.A., Diaz-Armas, G.G., **Candela-Leal, M.O.**, ..., & Ramirez-Mendoza, R.A. (2022). Current and Future Biometrics: Technology and Applications, in *Biometry*, pp. 1–30, CRC Press [paper]

## PROCEEDINGS PAPERS

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- Candela-Leal, M.O.**, Martínez-Díaz, D., Orozco-Romo, C., Aguilar-Herrera, A.J., ..., & Ramírez-Moreno M.A. (2023). Biomechanics Digital Twin: Markerless Joint Acceleration Prediction Using Machine Learning and Computer Vision. *2023 Future of Educational Innovation-Workshop Series Data in Action*, IEEE, Monterrey, Mexico [paper]
- Candela-Leal, M.O.**, García-Briones, J.M., Olivas-Martínez, G., Abrego-Ramos, R., ..., & Lozoya-Santos J.J. (2021) Real-time Biofeedback System for Interactive Learning using Wearables and IoT. *6<sup>th</sup> North American Industrial Engineering and Operations Management (IEOM)*, IEOM, Monterrey, Mexico [paper]

Aguilar-Herrera, A.J., Delgado-Jimenez, E.A., **Candela-Leal, M.O.**, Olivas-Martinez, G., ..., & Ramirez-Mendoza, R.A. (2021). Advanced Learner Assistance System's (ALAS) recent results. *2021 Machine Learning-Driven Digital Technologies for Educational Innovation Workshop*, IEEE, Monterrey, Mexico [paper]

Olivas-Martínez, G., **Candela-Leal, M.O.**, Ocampo-Alvarado, J.C., Acosta-Soto, L.F., ..., & Ramírez-Moreno, M.A. (2021). Detecting Change in Engineering Interest in Children through Machine Learning using Biometric Signals. *2021 Machine Learning-Driven Digital Technologies for Educational Innovation Workshop*, IEEE, Monterrey, Mexico [paper]

## ABSTRACTS

**Candela-Leal, M.O.**, Lozoya-Santos J.J., & Ramírez-Moreno M.A. (2023). Real-time Dual-feature Mental Fatigue State SVM Classification using EEG Delta Bandpower. *20<sup>th</sup> IEEE-EMBS International Conference on Body Sensor Networks (BSN)*, IEEE, Boston, MA, USA [paper]

## INVITED TALKS

Computing Seminar - <i>Universidad Autónoma de Nuevo León</i>	2023
Conscious Technologies for Smart Communities - <i>IUCRC BRAIN Tec Center</i>	2021

## HONORS AND AWARDS

2 <sup>nd</sup> Place - Research and Improvement Proposals at 22 <sup>th</sup> Conexión Tec	F 2023
Outstanding Student Award (top 1% best engineering trajectories)	2023
1 <sup>st</sup> Place - Research and Improvement Proposals at 18 <sup>th</sup> Conexión Tec	F 2021
1 <sup>st</sup> Place - Undergraduate Paper Competition at 6 <sup>th</sup> NA IEOM	2021
Outstanding IB Extended Essay - 51 <sup>th</sup> Research and Development Congress	2021
Scholarship for Academic Talent	2020
2 <sup>nd</sup> Place - State Chess Tournament (Nuevo León) at INJUVE	2020

## TEACHING

German A2 Teacher - <i>Mentoor</i>	2022-2023
Middle School Math and Spanish Teacher - <i>Aprendamos Juntos</i>	2021-2022
Independent High School Physics Teacher	F 2019
FIRST® LEGO® League Mentor - <i>Little Minds</i>	S 2019

## SKILLS SUMMARY

<b>Languages</b>	Python (3 years), MATLAB (2 years), R (1 year), SQL (3 months) English (C1), German (B1), Spanish
<b>Frameworks</b>	Numpy, Scipy, Matplotlib, Pandas, Scikit-learn, TensorFlow, Keras, BrainFlow, Flask Lattice, Dplyr, Tidyr, Caret, Ggplot, Shiny
<b>Tools</b>	FSL, FreeSurfer, MRtrix3, ANTs, NiBabel, PyDicom
<b>Platforms</b>	GitHub, Anaconda, CUDA, cuDNN, Tableau, Microsoft Excel, Overleaf, L <sup>A</sup> T <sub>E</sub> X
<b>Soft Skills</b>	Linux, ROS, Windows, Arduino, Raspberry Leadership, Problem Solving, Teamwork, Self-Learning, Time Management

## COURSERA SPECIALIZATIONS

Data Science - <i>The Johns Hopkins University</i> (288 h)	2021
Applied Data Science with Python - <i>University of Michigan</i> (145 h)	2021
AI for Medicine - <i>DeepLearning.AI</i> (72 h)	2021
Infectious Disease Modelling - <i>Imperial College London</i> (62 h)	2021
Neuroscience and Neuroimaging - <i>The Johns Hopkins University</i> (42 h)	2020
Machine Learning: Algorithms in the Real World - <i>Alberta Machine Intelligence Institute</i> (41 h)	2020

## AUDITED COURSES

9.014 Quantitative Methods and Computational Models in Neuroscience - <i>M. Jazayeri</i>	F 2023
9.66 Computational Cognitive Science - <i>J. Tenenbaum</i>	F 2023