

Emilio Villa Cueva

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🌐 github.com/villacu

More about me: villacu.github.io

EDUCATION

- **Universidad de Guanajuato** Guanajuato, México
*Bachelor in **Engineering Physics**; GPA: 9.79* *August 2017 - July 2021*
Relevant Coursework: Vector Calculus, Linear Algebra, Statistical Inference, Algorithms and Data Structures, Artificial Intelligence II, Statistical Pattern Recognition, Programming, Object-Oriented Programming

RESEARCH EXPERIENCE

- **Mathematics Research Center (CIMAT)** *June 2021 - Present*
Research Assistant. Department of Computer Science
Working on robust deep learning models based on the BERT architecture for the task of classifying aggressive language and hate-speech in (spanish) social media through adversarial training and domain adaptation techniques. Under supervision of Dr. Adrian Pastor Lopez-Monroy and Dr. Fernando Sanchez Vega.
- **University of Guanajuato** *January 2020 - Present*
Research Assistant. Division of Sciences and Engineering (DCI)
Worked on the design and construction of a low-cost meteorological station in the DCI-UG campus, initially to measure solar irradiance in the area. This project was funded by CONACYT and is being carried out under the supervision of Dr. Modesto Sosa Aquino.

QUALIFICATIONS

- **Programming Languages.:**
 - Python
 - R
 - C
 - C++
 - Matlab
- **Other technologies.:**
 - Latex
 - Simulink
- **Platforms:**
 - **OS:** Linux, Windows
 - **Microcontrollers:** Arduino, Texas Instruments, PIC Controllers
- **Soft skills:**
 - Problem solving.
 - Creativity.
 - Adaptability.
 - Teamwork.

LANGUAGES

- **Spanish:** Native
- **English:** Advanced. (TOEFL iBT score 112/120)
- **German:** Basic. (A2)

TECHNICAL EXPERIENCE

Research Projects

- **Forecasting short-term Solar Irradiance in the city of León:**
Using deep learning architectures such as LSTM and transformers.
(September 2020 - December 2020)
- **Simulating confined random walks under different conditions:**
For colloidal science interest: confinement due to optical tweezers, unidirectional external fields, harmonic and brownian cages. As part of the Soft-Matter Laboratory in DCI-UG under Dr. Erick Sarmiento Gomez at the University of Guanajuato.
(June 2020 - January 2021)

Technical Projects

- **Magnetic Induction Brake Prototype:** Contactless braking system that uses eddy currents to reduce a disk velocity, built as part of the electromagnetism course.
(September 2019 - December 2019)

ADDITIONAL EXPERIENCE AND AWARDS

Awards

- Academic Merit Award
Awarded by the University of Guanajuato to the student that graduates with the highest GPA in their class
- Second Place at UG BeeHack Hackathon
By designing a system to monitor student wellbeing and predicting dropout at the University
- Honorific Mention at RIIA: "Justicia para los desaparecidos" Hackathon
Providing solutions to clarify political dissapearances in Mexico through object detection in scanned documents

Additional Experience

- **Synthesizing doped lithium tetraborate for dosimetry purposes:**
Work done as a social service with Swarna Priya Thiagarajan during her PhD degree under the supervision of Dr. Modesto Sosa Aquino (January 2019 - June 2020)

VOLUNTEER EXPERIENCE

- **Member of the UG-DCI Scientific Dissemination Group** Guanajuato, México
University of Guanajuato September 2017 - July 2018
Participated in scientific dissemination activities showing different physics and chemistry experiments at highschools in Mexico, looking to encourage the students to take interest in science
- **Volunteering in Mexico rural areas** Santa Rosa, León, México
Instituto Lux July 2016
Provided support in different activities while living for two weeks in a rural community in Mexico.