Emilio Villa Cueva [INCOMPLETE cv]

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Education

- **Universidad de Guanajuato** — Guanajuato, México
  Bachelor in Engineering Physics; GPA: 9.79 — *August 2017 - July 2021*
  Important Mathematics Courses: *Vector Calculus, Linear Algebra, Probability and Statistics, Differential Equations and Complex Variable*
  Important Computer Science and Electrical Engineering courses: *Programming, Object Oriented Programming, Numerical Methods, Statistical Learning, Selected Topics on Artificial Intelligence, Algorithms and Data Structures, Microcontroller Architecture, Measurement and Instrumentation*
  Important Physics courses: *Classical Mechanics, Quantum Mechanics, Electromagnetism, Thermodynamics, Statistical Mechanics*

Skills Summary

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

Languages

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

Technical Experience

Research Projects

- **Classification of aggressiveness and hate speech in social media using BERT models**: (Work in progress)
  Working in the development of deep learning models based on the BERT architecture for the task of classifying aggressive language and hate-speech in social media in spanish. The objective is to develop a more robust model through adversarial training and domain adaptation. Under supervision of Dr. Adrian Pastor Lopez-Monroy and Dr. Fernando Sanchez Vega at the Mathematics Research Center CIMAT (July 2021 - present)
- **Forecasting short-term Solar Irradiance in the city of León**:
  Implemented a time series forecasting model based in a transformer architecture for the task of predicting short-term Global Horizontal Irradiance. This model aims to work with the weather station to be constructed in the DCI-UG campus (September 2020 - December 2020) .
- **Simulating confined brownian motion under different conditions**:
  As part of the Soft-Matter Laboratory in DCI-UG, worked in designing and running simulations of a 2-dimensional particle under brownian motion confined in a box, measuring the effects of moving the box under different patterns and time regimes. I worked under Dr. Erick Sarmiento Gomez at the University of Guanajuato (June 2020 - January 2021)

Technical Projects

- **Building a low cost metheorological station at the UG-DCI campus**: (Work in progress)
  Design and constructon of a low-cost metheorological station in the DCI-UG campus, intially 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 (January 2020 - present)
- **Magnetic Induction Brake Prototype**: Contactless braking system that uses parasitic currents to reduce a disk velocity, built as part of the electromagnetism course. (September 2019 - December 2019)

Additional Experience and Awards

Awards

- Academic Trajectory Award by the University of Guanajuato
  Awarded to the student that graduates with the highest GPA in the class
- Yearly Academic Merit Award by the University of Guanajuato (Years: 2018,2019,2021)
  Awarded to the student with the highest GPA in the class in a given academic year
- Second Place at BeeHack Hackathon
  By designing a system to monitor student wellbeing and predicting dropout at UG
- Honorific Mention at RIIA *"JusticIA para los desaparecidos"* Hackathon
  Providing solutions to clarify political dissapearances in Mexico in the 60s

Additional Experience

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

Research Experience

- **University of Guanajuato**
  Research Assistant. *Design and Implementation of weather station in DCI-UG campus* *January 2020 - Present*

Volunteer Experience

- **Member of the UG-DCI Scientific Dissemination Group** Guanajuato, México
  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
  July 2016

  Helped in different activities while living for two weeks in a community in the rural area of Mexico.