

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

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 meteorological station at the UG-DCI campus:** (Work in progress)
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 (January 2020 - present)
- **Electromagnetic Braking System:** [MISSING]

LANGUAGES

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

ADDITIONAL EXPERIENCE AND AWARDS

- Academic Merit Award by the University of Guanajuato
Awarded to the student that graduates with the highest GPA in the class
- Yearly Academic Recognition 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
- Honoric Mention at RIIA "Justicia para los desaparecidos" Hackathon
Providing solutions to clarify political dissapearances in Mexico in the 60s

SKILLS SUMMARY

- **Programming Languages.:**
 - **Python:** Very fluent. Libraries: *Pytorch, Keras, Tensorflow, Scikit-Learn, NLTK*
 - **R:** Mostly used for statistics and traditional machine learning applications
 - **C:** Mostly used it for numerical methods for physics applications
- **Platforms:**
 - **OS:** Linux, Windows
 - **Microcontrollers:** Arduino, Texas Instruments, PIC Controllers
- **Other skills:**
 - **Broad scope and goal oriented:** I like inter
 - **Analytic and critical thinking:** [MISSING]

RESEARCH EXPERIENCE

- **Center for Research in Mathematics**
Research Assistant. Working in the task of Aggressiveness and Hate Speech Detection June 2021 - Present
- **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.