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 Mathematics Courses: *Vector Calculus, Linear Algebra, Probability and Statistics, Differential Equations and Complex Variable*

  Relevant 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*

  Relevant Physics courses: *Classical Mechanics, Quantum Mechanics, Electromagnetism, Thermodynamics, Statistical Mechanics*

RESEARCH EXPERIENCE

- **Mathematics Research Center (CIMAT)**
  Research Assistant. — *June 2021 - Present*
  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**
  Research Assistant. *Division of Sciences and Engineering (DCI)* — *January 2020 - Present*
  Worked on the 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.

SKILLS SUMMARY

- **Programming Languages.**:
  - Python
  - R
  - C
  - Matlab

- **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

- **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 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
- 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 lithium tetraborate for dosimetry purposes**:
  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)

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

  Provided support in different activities while living for two weeks in a rural community in Mexico.