Emilio Villa Cueva

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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 Recognition of Patterns, Programming, Object-Oriented Programming*

Research Experience

- **Mathematics Research Center (CIMAT)**
  Research Assistant. *Department of Computer Science* *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 novel domain adaptation techniques. Under the supervision of Dr. Adrian Pastor Lopez-Monroy and Dr. Fernando Sanchez Vega.

- **Universidad de Guanajuato**
  Research Assistant. *Division of Sciences and Engineering (DCI)* *January 2020 - Present*
  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 the National Council of Science and Technology (*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)

Projects

Relevant School Projects

- **Forecasting short-term Solar Irradiance in the city of León**:
  Implementation of deep learning architectures such as LSTM and transformers for the task of Solar Irradiance Forecasting in the city of León.
  (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)
- **Magnetic Induction Brake Prototype**:
  A contactless braking system that uses eddy currents to reduce a disk velocity, built as part of the electromagnetism course.
  (September 2019 - December 2019)

Projects from Hackathons

- **Student well-being and predicting school dropout**: (UG BeeHack)
  A conceptual app centered on student well-being along with a working model based on an SVM classifier to predict whether a student was at risk of dropping out based on their academic records.
  (May 2021)
- **Object Detection and Document Binarization on scanned documents**: (RIIA *"JusticIA para los desaparecidos"* Hackathon)
  Proposed a solution that used a neural network based on the *yolov5* architecture to perform Object Detection and other based on an UNet architecture for document binarization in low-quality scanned documents.
  (September 2021)

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
- Honorific Mention at RIIA: *"JusticIA para los desaparecidos"* Hackathon

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 high schools 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.