# Emilio Villa Cueva

evillacueva@gmail.com
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
  - 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

- **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.