Emanuel Samir Muñoz Panduro

E-mail: emunoz@andrew.cmu.edu | Web: emanuelsamir.com | Github: EmanuelSamir | LinkedIn: emanuelsamirmp

I am a **machine learning engineer** with 2+ years of experience. I am interested in **machine learning**, **computer vision**, and **robotics** applications for global or social issues. I worked on several projects related to autonomous systems, machine learning (ML), and control using technology such as **Python**, Scikit-learn, **Tensorflow**, PyTorch, Github, and ROS. I have published **six IEEE research publications**. I am currently implementing personal projects using Docker, Github Actions, DVC, GCP, and Python.

EXPERIENCE

Carnegie Mellon University, Machine Learning & Robotics intern — *May, 2021 - Present*

- Working in the research group of **Prof. John Dolan** under the supervision of **Qin Lin**.
- Designing and implementing a **safe learning** framework for controlling autonomous mobile robots based on **Control Barrier Function** and **Extreme Learning Machine**.
- Previously accepted into selective AI and Robotics program named "Robotics Institute Summer Scholar" (RISS) 2021.

Tech Stack: Python, PyTorch, Scikit-learn, CasADi

CONCYTEC, Robotics Research Assistant— *March, 2020 - April, 2021*

- Collaborated in a government-funded project to implement a nonlinear controller in a surgical robot platform based on haptic control. Published two indexed papers, one pending.
- Implemented a hybrid learning controller for torque-position transformation in manipulator robots
- Designed and implemented a camera framework for feedback sensing using computer vision and filtering techniques.

Tech Stack: Python, PyQT, Tensorflow, Matlab, ROS, Gazebo

Yale University, Associate Researcher— *Jan, 2020 - March, 2020*

- Worked at Schroers Lab under the supervision of **Jan Schroers** and Sung Woo.
- Designed and developed new alloys with potential mechanical properties for the industry.
- Opportunity sponsored by Research Experience for Peruvian Undergraduates (REPU). Nano REPU 2019.

ISA REP, Computer Vision Intern — *July, 2019 - December, 2019*

- Designed and developed **two** methods for corrosion detection based on **computer vision** and **machine learning** for decision making. **Machine learning methods** used: **SVM, Random Forest, Neural Networks**.
- Launched the first phase of automatic supervision of +1000 km powerlines using drones and **supervised learning**.
- Developed a framework for **semantic labeling**, **classifier training**, and a GUI prototype.

Tech Stack: scikit-learn, scikit-image, Keras, Tensorflow, OpenCV

PROJECTS

Autonomous Mobile Robotics – github repo: EmanuelSamir/201_dev_rndlocalizer

- Designed and implemented algorithms for **autonomous** motion planning and exploration on mobile robots in real and simulated environments.
- Built complete frameworks for mobile robotic applications and **published four papers** showing results.
- **Tech Stack:** ROS, Gazebo.

End-to-end navigation and exploration robotics – github repo: EmanuelSamir/2d-navigation-drl

- Developed a reinforcement learning agent applied on a mobile robot for exploration and navigation tasks.
- **Tech Stack:** Open AI Gym, PyTorch, Matplotlib

Image Enhancer– github repo: EmanuelSamir/DIP_project_Testing

- Built a model architecture to automate beauty-enhancing of photos using image manipulation.
- **Tech Stack:** Tensorflow, scikit-learn, scikit-image.

SKILLS

Programming Languages: Python, Linux Shell Scripting, C/C++, Matlab, Javascript.
Frameworks and Tools: Keras, PyTorch, Keras, scikit-learn, scikit-image, OpenCV, Pandas, Numpy, Spacy, Git
DataBase and Infrastructure: SQL, Pandas, Docker, Kubernetes, GCP, AWS
Languages: Fluent: English C1 (TOEFL iBT certified); Native: Spanish.

EDUCATION

Universidad de Ingeniería y Tecnología - UTEC– Lima, Perú. *Bachelor of Science, Electrical Engineering.*

CERTIFICATIONS

Platzi certifications: profile: Emanuel_Samir

- **Web development:** Javascript, Asynchronism with Javascript, Go.
- **Machine Learning:** Tensorflow.js, PPO and Algorithms, Applied Machine Learning.
- **Soft Skills:** Effective communication, Effective Time Management, Personal Branding.