Ángel Encalada

B.Sc. Student in Mechatronics Engineering

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About me

Highly dedicated student with experience in Computer Modeling, Autonomous Flight Car, Natural Language Processing and Machine & Deep Learning applied to Structural Health Monitoring. Strong leadership skills proven through involvement in academic events and recognition awards. Seeking a position as data scientist, mechatronics design assistant or research assistant to continue career growth into working life.

Research Interests

- Mechatronics Design
- Machine & Deep Learning
- Structural Health Monitoring
- Renewable Energy

Education

2016–Present **B.Sc. in Mechatronics Engineering**, *ESPOL Polytechnic University* , Guayaquil.

2010–2016 **B.Tech. in Electrical Installations, Devices and Machines**, *College of Baccalaureate "Jambelí"*, Ecuador.

Experience

June 2020 Present **Research Intern**, *Energy and Transport Sciences Laboratory (ETSL - Purdue University)*, Indiana, USA.
Doing computer modeling of PEMFC Gas Diffusion Layer (GDL) to study the two-phase flow hysteresis effects, and elucidate the influence of carbon corrosion.

- OpenPNM | Python | MATLAB | ParaView | LaTeX

Oct 2019 Present **External Researcher**, *Control, Dynamics and Applications (CoDAlab - Universitat Politècnica de Catalunya)*, Barcelona, Spain.
Developing machine & deep learning models applied to Structural Health Monitoring to make fault prediction and classification in wind turbines.

- Python | MATLAB | Pandas | Matplotlib | Scikit-learn | Pytorch | LaTeX

May 2019 Present **Academic Instructor**, *ACPrime*, Guayaquil, Ecuador.
Teaching beam and column deflection, mechanical stress, Mohr's circle, forces, and moments. Likewise, teaching AC/DC motors operation, threephase and monophase circuits, transformers, and magnetic circuits.

Feb 2018 Present	**Research Assistant**, *LabFREE ESPOL (Energy Renewable Sources Laboratory)*, Guayaquil, Ecuador. Doing computer modeling of porous media applied to fuel cells to improve its mechanical properties and efficiency. ○ Python | MATLAB | OpenPNM | ParaView | LaTeX
May 2019 Present	**Research Assistant**, *ESPOL Polytechnic University*, Guayaquil, Ecuador. Developing machine learning models to make network topology fault prediction, and on the other hand developing models to make body postures classification in oral presentations. ○ Python | Scikit-learn | Pandas | Matplotlib
May 2019 Oct 2019	**Research Assistant**, *ESPOL Polytechnic University*, Guayaquil, Ecuador. Developing machine learning models to study data related to commercial activity, criminal activity, and mobility patterns at intraurban level. ○ Python | Pandas | Matplotlib | LaTeX
May 2019 Oct 2019	**Teaching Assistant**, *ESPOL Polytechnic University*, Guayaquil, Ecuador. Teaching to program in Python language. ○ Python | Pandas | Matplotlib
Feb 2020 May 2020	**Mechatronics Design Assistant**, *MELACORP S.A.*, Guayaquil, Ecuador. Development of a mobile app to monitor pumping stations in shrimp farms. ○ Java | Android Studio | Node-RED | TIA Portal

Certifications

May 2020	**Deep Learning Nanodegree**, *Udacity*. Learn to build and apply your own deep neural networks to challenges like image classification, prediction, and model deployment.
Dec 2018	**Web Data Analytics, Mining User Opinions**, *Mobile & Web Technologies and Data Science Research Club, ESPOL*, Guayaquil. Text processing of datasets based on social media, e.g. Twitter. Sentiment analysis applied on social media content.
Oct 2018	**Papers elaboration and LaTex document system application**, *Faculty of Engineering Earth Sciences, ESPOL*, Guayaquil. Academic course about general structure of research papers and administration and elaboration of different kind of documents on LaTex platform.

Knowledge Area

Mar 2020	**Natural Language Processing**, *Udacity*. Learn cutting-edge natural language processing techniques to process speech and analyze text. Build probabilistic and deep learning models, such as hidden Markov models and recurrent neural networks, to teach the computer to do tasks such as speech recognition, machine translation, etc.
Oct 2019	**Flying Car and Autonomous Flight Engineering**, *Udacity*. Learn the core concepts required to design and develop robots that fly. Work with the quadrotor test platform and our custom flight simulator to implement planning, control, and estimation solutions.

Skills

Python, Android Studio, Arduino, Autodesk Inventor, Autodesk AutoCAD, MATLAB

Languages

| Native | Spanish |
| Intermediate | English |

Involvement

May 2019 Present — **Club Member**, *Mechatronics Club*, ESPOL Polytechnic University.
Research projects related to Robotics, Automation and Electronics. Activities of links with society.

Oct 2018 Present — **Club Member**, *ROBOTA Robotics Club*, ESPOL Polytechnic University.
Robotics competitions oriented to battle robots, line tracker robots, maze robots, LEGO creativity, etc.

Jun 2018 Feb 2019 — **Academic Vice-President**, *Mobile & Web Technologies and Data Science Research Club (TAWS)*, ESPOL Polytechnic University.
Projects related to Artificial Intelligence, Data Science and IoT.

Awards

Dec 2019 — **1st Place I+D+i Category: Recognition of Science, Technology and Innovation Initiatives and Ancestral Knowledge**, *Organization of Ibero-American States for Education, Science and Culture (OEI) & Secretariat for Higher Education, Science, Technology and Innovation (Senescyt)*, Ibarra.
Partipation of Transport Phenomena Research Group at the first National Meeting of Networks and HUB of Technology Transfer where results about Fuel Cells research were presented.

Nov 2019 — **Best Oral Presentation Finalist: Ecuadorian Network of Universities for Research and Postgraduate Studies Congress**, *Yachay Experimental Technology Research University*, Ibarra.
Oral Presentation titled: "Pore Network Modelling: Importancia del Modelamiento Computacional para la mejora de las Propiedades Mecánicas en Celdas de Combustible".

Jan 2018 — **1st Place: Hackathon GeoViz Challenge 2017**, *Mobile & Web Technologies and Data Science Research Club, TAWS*, Guayaquil.
Massive data analysis and interactive visualizations design for data interpretation.

Publications

2020 — **A Permeability–Throat Diameter Correlation for a Medium Generated with Delaunay Tessellation and Voronoi Algorithm**, with (J. Barzola & M. Espinoza), *Transport in Porous Media*. Available here.

2019 — **Digital Transactions Mining to Characterize Temporal Rhythms of a City**, (with C. Orellana, C. Vaca, J. Gorotiza & N. Pilco), *Conference Proceedings of the 6th International Conference on eDemocracy and eGovernment, ICEDEG 2019*. Available here.

References

Mayken Espinoza, Ph.D., Associate Professor, Transport Phenomena Research Group Director. Tel: (+593) 9 9186 2444. E-mail: masespin@espol.edu.ec

Christian Tutivén, Ph.D., Associate Professor, Faculty of Mechanical Engineering and Production Science. Tel: (+593) 9 5862 1189. E-mail: cjtutive@espol.edu.ec

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