Ángel Encalada-Dávila

B.Sc. in Mechatronics Engineering

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About me

Experience in ATMs Software Industry, Computer Modeling (Fuel Cells), Unmanned Vehicle Simulation (Drones), Machine & Deep Learning applied to Structural Health Monitoring and Fault Prognosis (Wind Turbines). Strong leadership skills proven through involvement in academic events and recognition awards. Seeking a position as Data Scientist, Mechatronics Engineer or Researcher.

Research Interests

- Fault Prognosis in Wind Turbines
- Machine & Deep Learning
- Structural Health Monitoring
- Mechatronics Design
- Renewable Energy
- Reinforcement Learning

Education

2016–2021 **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

Jun 2020 – Present **Software Engineer**, *CMS Business Solutions*, Guayaquil, Ecuador.
Technical support for ATMs in banking, monitoring, hardware and software testing, information-logs analysis, and troubleshooting.

- Kalignite | MySQL | Hyosung | Diebold | NDC Protocol

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

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

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

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

May 2019 – Jun 2020 **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.

May 2019 – Jun 2020 **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 analyze 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

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

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, MATLAB, Autodesk Suite, Microsoft Office Suite, KTC Suite

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

2021 Á. Encalada-Dávila, B. Puruncajas, C. Tutivén, and Y. Vidal, "Wind Turbine Main Bearing Fault Prognosis Based Solely on SCADA Data," Sensors, vol. 21, no. 6, p. 2228, Mar. 2021.

2020 E. Melo, Á. Encalada, and M. Espinoza-Andaluz, "Behavior of a Polymer Electrolyte Fuel Cell from a Statistical Point of View Based on Data Analysis," in Information and Communication Technologies, Springer International Publishing, 2020, pp. 117–128.

2020 A. Encalada and M. Espinoza-Andaluz, "Compression Effects on Mass Transport Phenomena in digitally generated PEFC Gas Diffusion Layers by using OpenPNM," presented at the 2020 IEEE ANDESCON, Oct. 2020, doi: 10.1109/andescon50619.2020.9272133.

2020 Á. Encalada, J. Barzola-Monteses, and M. Espinoza-Andaluz, "A Permeability–Throat Diameter Correlation for a Medium Generated with Delaunay Tessellation and Voronoi Algorithm," Transp Porous Med, vol. 132, no. 1, pp. 201–217, Jan. 2020, doi: 10.1007/s11242-020-01387-z.

2019 A. Encalada, C. Orellana Fantoni, C. Vaca, J. Gorotiza, and N. Pilco, "Digital Transactions Mining to Characterize Temporal Rhythms of a City," presented at the 2019 Sixth International Conference on eDemocracy & eGovernment (ICEDEG), Apr. 2019, doi: 10.1109/icedeg.2019.8734445.

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