Alex Amaguaya Pacalla

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Education

2014 - 2019 **B.Sc. in Economics**, *GPA 8.02/10*. Escuela Superior Politécnica del Litoral (ESPOL), Ecuador.
Capstone Project: Advertising Spending Efficiency analyzed through Twitter Data for Companies in the Commercial Sector in 2018.
Relevant Coursework: Calculus, Linear Algebra, Mathematical Economics, Microeconomics, Game Theory, Macroeconomics, Econometrics, Time Series, Python Programming and **Big Data Track**.

Fields of Interest

Primary Machine Learning, Data Science, Applied Econometrics and Networks.
Secondary Causal Inference, Applied Microeconomics and Social Media.

Research & Teaching Experience

Dec.2021-Jan. 2022 **Research Assistant**, *ESPOL & North Carolina State University*, Ecuador.
- Supervised by professors José Castillo and Miguel Castillo (NC State University). Predicted some chemical compounds of cocoa with data from leaves and almonds using Machine Learning algorithms like XGBoost, Random Forest and SVRegression. The prediction results were then compared with the Principal Component Regression models in order to evaluate the performance between the different approaches.

Apr.2021-May 2021 **Consulting Researcher** , *Economic Research Center - ESPOL & Cervecería Nacional*, Ecuador.
- Computed the influence of the most important brewing company in Ecuador on the financial performance of its suppliers through econometric models. The consulting research was supervised by professor José Castillo.

Dec. 2019-Oct.2020 **Research Assistant**, *Inter-American Development Bank & ESPOL*, Ecuador.
- Estimated socio-economic impact of ESPOL on the Coastal Region (focused in the R+D+i area). In particular, I estimated the influence of ESPOL on the financial performance of its suppliers using econometric models and matching methods.
- Used R and Python to estimate econometric models, process and visualize the data. This research project was supervised by professors José Castillo and Juan Campuzano.

May. 2019-Sep. 2019 **Research Assistant**, *ESPOL*, Ecuador.
- Supervised by professor Juan Campuzano. Extracted and processed Twitter data of top Ecuadorian commercial firms using R and Python. Developed a multi-label classification model, Support Vector Classifier, in order to identify the polarity of a tweet and then a Sentiment Metric was estimated.
- Analyzed the Main Administrators Network of Ecuadorian firms. Proposed an econometric model that relates the firm's financial performance with control variables and some centrality metrics. Used Gephi and Python to visualize the network and calculate metrics. This research paper was supervised by professor Carmen Vaca.

May 2017-Sep.2017 **Teaching Assistant**, ESPOL.
Microeconomics II. Intermediate Microeconomics: Overall Competitive Balance (consumption and production), Market Power (monopoly and price discrimination).

Professional Experience

Apr. - May 2018 **Data Analyst** (Internship), *Induglobal S.A*, Ecuador.
- Analyzed data from a Social Media advertising campaign.
- Proposed new business strategies based on Social Media Data Analysis.

Apr. 2021-Present **Data Scientist**, *Nodel LLC-Maven Road*, Ecuador.
- Social Network Analysis.
  - Community detection in networks of Vaping & Gaming users.
  - Proposed a Spreading Metric using a Diffusion Model.
  - Detected main accounts based on some centrality metrics.
- Applied Econometrics.
  - Found relevant trends and insights between financial KPIs and Social Media/Search Data.
  - Developed Time Series anomaly detection with Social Media Data.
  - Predicted impacts of Social Media variables on the Financial KPIs.
- Machine Learning.
  - Performed Time Series clustering with viral tweets.
  - Developed a model that scores influencers based on some Social Media metrics.
  - Supported in the development of a Pipeline that infers the location of Vaping & Gaming users.

Publications

2020 **Advertising Spending Efficiency analyzed through Twitter Data for Companies in the Commercial Sector in 2018**, (with J. Campuzano & J. Cajape), X-Pedientes Económicos, 2020, Available here.

2019 **Network of Shared Administrators and its Relation to the Financial Performance of Ecuadorian Companies: What is the Influence of Sharing Human Capital?**, (with C. Vaca & F. Lúa), X-Pedientes Económicos, 2019, Available here.

Other Research Writing

2021 **Evaluation of the Economic contribution of the Escuela Superior Politécnica del Litoral - ESPOL: A short and long term analysis**, (with J. Castillo, J. Campuzano & N. Gómez), Available here.

Work in Progress

Administrators Network of Ecuadorian firms: An Approach of Panel Data, (with J. Cajape).

Earthquake in Ecuador: Determine the main factors of the Level of Villages Impact through Socioeconomic Indicators and Mobile Phones Data, (with C. Vaca & J. Cajape).

Conferences

2022 Speaker in the Data Science Ecuador event: ESPOL Economists and Data Scientists in the industry.

Awards

Nov. 2019 **Research Paper Competition**, Superintendency of Companies from Ecuador.
Obtained 1st place. Proposed an econometric model that analyzes the efficiency of Advertising Spending of commercial firms by relating Twitter indicators and Dorfman-Steiner condition. In addition, I received additional recognition for participating as co-author in two award-winning research papers.

Dec. 2018 **Hackathon DataJam 2018**, ESPOL-i3lab.
Obtained 1st place. Developed models to predict transactional behavior and detect anomalies through ARCH and Logistic models.

Dec. 2012 **Best Students Award**, Ati II Pillahuaso High School.
Bronze medal of the 2012 promotion.

2011 & 2012 **Jóvenes Ejemplares**, Municipality of Guayaquil-Ecuador.
Recognition of Academic Excellence (only awarded to the best students of the Guayaquil high schools).

Computer & Technical Skills

Programming Languages: Python and R.

Query Languages: SQL, cypher

Cloud computing & other tools: Azure Databricks, AWS, Neo4j Aura, Git, Stata & Gephi.

Technical Skills: Statistical Data Analysis; data manipulation, processing and transformation; Social Network Analysis; Machine Learning Algorithms; Econometric modelling and Social Media Mining.

Extracurricular Activities

2018 - Present **Member**, Kokoa Club , ESPOL.
Kokoa is the Free Software Community of ESPOL that is dedicated to promote the use and distribution of free software at the university and Guayaquil. Represented the club in several hackathons and research competitions.

2018 - Present **Member**, CADIEC Club, ESPOL.
CADIEC is a club dedicated to promote and develop economic researches about Ecuadorian market.

Feb. - Apr. 2019 **Volunteer Experience**, Future Scientists and Engineers, AJA! Science Park - ESPOL.
This project is a holiday course that is dedicated to bring children closer to Science, Technology and Engineering, through interactive games and experiments.

Oct. - Dec. 2018 **Volunteer Experience**, Women Entrepreneurs Project, ESPOL.
This project was dedicated to provide support to the entrepreneurship initiatives of women residing in marginal urban areas of Guayaquil. Participated in the second stage of this project.

Additional Information

Languages: Spanish (native), English (TOEFL IBT: 68 ,waiting results of last sections).

References

PhD. Carmen Vaca, Dean & Co-director Big Data Research Group, College of Electrical and Computer Engineering, ESPOL. Tel: +593 93 979 1622. Mail: cvaca@espol.edu.ec

M.Sc. Juan Carlos Campuzano, Associate Professor, College of Social and Humanistic Sciences, ESPOL. Tel: +593 99 588 6810. Mail: jcampuza@espol.edu.ec

PhD. José Gabriel Castillo, Vice Minister of Economy, Government of Ecuador. Tel: +593 99 509 4754. Mail: jcastil@espol.edu.ec

PhD. Angel Fiallos, Data Science Team Lead, Nodel LLC. Tel: +593 99 451 6233. Mail: angel.fiallos@nodel.co