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Carlos Gustavo Salas Flores

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Education

Duke University/Duke Kunshan University, *B.S. in Data Science* — *Durham, NC + Kunshan, China*

- GPA: 3.7/4.0.
- Dual-degree, Full Scholarship, and Dean's list (2019, 2020).
- Relevant Coursework: Data Science, Data Analysis, Computer Science, Economics, Econometrics, Fintech, and Machine Learning.

Experience

Sanford School of Public Policy at Duke University — **Jan 2022 — Present**
Research Assistant - Data Analysis — *Durham, NC*

- Gathered and cleaned US Census and survey data to design social policies that improved accessibility to non-English speakers.
- Compiled more than 15,000,000 data-points in a database (R).
- Produced info-graphics and dashboards to convey information to the general public.

Data Science Research Center at Duke Kunshan University — **May 2021 — Present**
Research Assistant - Data Science — *Shanghai, China*

- Prepared financial data from the S&P 500 for algorithmic trading (NumPy and Pandas).
- Assessed Machine Learning algorithms including Reinforcement Learning, Random Forests, Gradient-Boosted Trees, and Deep Neural Networks (PyTorch and Scikit-learn).
- Evaluated different approaches to pairs trading, applied dimensionality reduction (PCA), data transformations for visualization (t-SNE), and optimized pairs selection by more than 50%.
- Performed Back-testing and achieved positive returns (22% on average).

Duke Department of Physics — **Dec 2020 — May 2021**
Research Assistant - Software Engineering — *Durham, NC*

- Built an image reconstruction and pattern recognition algorithm to detect Dark Matter particles.
- Implemented C/C++ algorithms into integrated circuits (FPGAs and Vivado HLS) that optimized the performance of the Large Hadron Collider by a factor of 1000.

Projects

Real-Time Semantic Segmentation for Autonomous Vehicles — **Jan 2022 — Present**
Duke Kunshan University — *Kunshan, China*

- Led research to improve Semantic Segmentation algorithms that optimized the trade-off between accuracy and efficiency.
- Implemented contemporary Machine Learning models in Python (including ICNet, BiSeNet, DDRNet, and DFANet) using PyTorch.
- Conducted data analysis, tested on Cityscapes dataset under the same hardware and software, and achieved over 65% accuracy and less than 200 ms running time on each algorithm.
- Developed a new Deep Learning model based on the Deep Aggregated Neural Network (DFANet) model, improved the accuracy and running time of such model by 5%, and achieved over 70% accuracy and less than 40 ms running time.

Airbnb Customer Segmentation — **May 2020 — July 2020**
Duke Kunshan University — *Kunshan, China*

- Created 3D plot charts and graphs for data visualization that facilitated the identification of suspicious users potentially using the app to run Hotels (Matplotlib and Seaborn).
- Handled more than 10GB of data and optimized the data segmentation process by applying dimensionality reduction using Support Vector Decomposition (SVD) which reduced the running time in 10% (Pandas, NumPy, and Scikit Learn).

Skills

Programming Languages	Python, Java, C/C++, R, and SQL
Technologies	HTML, Git, LaTeX, TensorFlow, PyTorch, NumPy, and Pandas
Quantitative Research	ETL, Data Visualization, Data Analysis, Machine Learning, and Mathematical Modeling
Languages	English (Fluent), Spanish (Native), and Chinese (Intermediate)
Software	Tableau, OpenRefine, and Microsoft Excel

Achievements

- National Finalist at the Alibaba GET Challenge (top 12 out of 250+ teams).
- Founder and President of Duke Freestyle, Duke's first Spanish Freestyle-Rap Club.