Iván Sepúlveda
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+1-714-724-4958

GitHub
LinkedIn

Education

University of San Francisco Graduated August 2019
Bachelor of Science - Physics GPA: 3.05

Experience

Solar Mosaic LLC - Oakland, CA *June 2021 - Present*

Sr. Analyst - Risk Analytics & Strategy

- Developed a network analysis project, utilizing IP-address, geographical, and business registration data, to identify risk & fraud among entities using tools including `SQL & Gephi`
- Implemented a dynamic scorecard methodology for business-partner risk assessment. Collaborated with team to design daily-updating schema and alert system for high risk partners
- Acted as a liaison between Data Engineering and Risk by leading the implementation of data initiatives using `DBT, Apache Airflow, & Amazon Web Services`

L-Egant Solutions, LLC - Irvine, CA *October 2019 - December 2022*

Lead Software Developer [Contract]

- Developed scripts for operation and data management of high frame rate digital cameras (triggerable to 40 μs) capturing light-phase-encoded intensity images from input laser beam
- Created software package with Graphic User Interface (GUI) providing real-time video capture/streaming & data transformation utilities (e.g. statistical representations of pixel intensity distributions, two-dimensional Gaussian characterization, image algebra, etc.)

Mechanics Bank Auto Finance - Irvine, CA *June 2021 - Present*

Data Analyst - Portfolio & Servicing Risk

- Implemented K-means & Hierarchical clustering to segment collection agents and develop incentive programs for top performers & identify agents with potential for growth.
- Leveraged Random Forest algorithms to analyze hundreds of credit quality metrics as they relate to credit solvency. Used findings to inform credit policy framework.
- Analyzed portfolio risk trends as well as macro-economic data to forecast losses and produce operational/demographic/financial reports.

Research

Plasma Characterization *Fall 2017 - Summer 2019*

Undergraduate Research Assistant

- Developed and implemented a two-dimensional Monte Carlo simulation to derive the Electron Energy Distribution Function (EEDF) in low-temperature plasma, focusing on argon gas
- Calculated electron motion and collision dynamics under varied conditions using collision theory, significantly improving the accuracy of plasma behavior predictions
- Leveraged a suite of `Python` libraries for robust simulation, analysis, including `numpy, pandas, scipy, statistics, matplotlib and mayavi`

Rideshare/Transportation Modeling *Summer 2019*

Undergraduate Research Assistant

- Developed dynamic model of rideshare pricing using Uber data with public transit options, capturing bi-model data distributions and implementing an Expectation Maximation algoritm

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Electron Emission Modeling *Fall 2016*

Undergraduate Research Assistant

– Utilized COMSOL Multiphysics to develop a simulation of a femtosecond laser emitting pulses at a metal alloy tip, parameterizing heat, alloy composition, and pulse length

Projects

Analyzing Feature Importance for Outperforming S&P 500 *Spring 2019*

Written in `R` using `R-Studio`

– Employed various classification methods including logistic regression, Support Vector Machine (SVM), and k-Nearest neighbors to analyze the most impactful factors in individual securities' performances outperforming the S&P 500
– Discovered the significance of variable importance across different classification methods and identified key financial indicators such as sector, price to book ratio, EBITDA, and earnings per share as critical determinants of stock performance

WebCrawler *Fall 2019*

Written in `Java` tested with `JUnit`

– Designed Inverted Index program to clean & parse text into stems, constructing a custom inverted index data structure of words to their document positions
– Developed a multithreaded WebCrawler which limited URL parsing, handled HTTP/HTTPS, ensured URL consistency, employed breadth-first search, and avoided reprocessing URLs.
– Combined above projects into a Search Engine capable of finding keywords within Project Gutenberg library as well as New York Times archives and return a rank-ordered the most relevant books/articles

Awards & Achievements

– 3rd Place: USF Computer Science Department Coding Contest *Spring 2019*
– Research Presenter: USF Creative Activity and Research Day *Spring 2019*
– Scholarship Winner & Recipient - Battier Take Charge Foundation *Fall 2014*

Publications

Journal Articles

[1] C. T. Chavez et al. "Measurement of 2D density profiles using a second-harmonic, dispersion interferometer". In: *Review of Scientific Instruments* 94.2 (Feb. 2023), p. 023503. ISSN: 0034-6748. URL: https://doi.org/10.1063/5.0119896.

[2] M. Nikolic et al. "Applicability of optical emission spectroscopy techniques for characterization of Ar and Ar/O2 discharges". In: *Journal of Physics D: Applied Physics* 54.27 (Apr. 2021), p. 275203. URL: https://dx.doi.org/10.1088/1361-6463/abf61c.

Relevant Coursework

- Software Development
- Introduction to Computer Science I & II
- Statistical & Thermal Physics
- Calculus & Analytic Geometry I/II/III
- Methods of Mathematical Physics
- Advanced Business Analytics