Iván Sepúlveda
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Education

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

Experience

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

- Identify performance trends, monitor risk KPI's, and conduct loan-level analysis to isolate causes for variances between risk indicators and expected performance
- Establish and maintain a feedback loop with credit policy and operations to enhance credit quality and balance loan origination volumes for a growing portfolio
- Manage and support monthly and ad-hoc presentations regarding asset performance

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

- Produced software tools providing real-time video capture/streaming
- Created video data transformation utilities (e.g. statistical representations)
- Developed methods to analyze, compile, and compare raw image data

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

- Assisting in the development and ongoing analysis of servicing strategies
- Developing, designing and analyzing portfolio trends and assessing risk of those trends
- Producing and analyzing risk, operational, demographic and other reports as necessary

Freelance - Computer Science Tutor *June 2021 - Present*

- Tutored a fifth-grade student in basic Computer Science principles, promoting computational thinking and problem-solving skills
- Developed engaging modules to introduce programming and algorithms, sparking early interest in Computer Science

Research

Plasma Characterization *June 2021 - Present*

- 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 *October 2019 - December 2022*

- Built a dynamic model of rideshare prices by day of the week based on Uber data
- Integrated real public transit data into model as a consumer option

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Electron Emission Modeling *June 2021 - Present*

– Used COMSOL Multiphysics to develop a simulation of a femtosecond laser releasing pulses of light at a sharp metal alloy tip
– Experimented with parameters such as heat, alloy composition, and pulse length

Projects

Analyzing Feature Importance for Outperforming the S&P 500 *Fall 2019*

– Employed various classification methods like Logistic Regression, Support Vector Machine, and k-Nearest Neighbor 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*

– Wrote Inverted Index program to clean & parse text into stems, constructing an inverted index of words to their document positions
– Developed a WebCrawler which was multithreaded, 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 *Fall 2019*
– Research Presenter: USF Creative Activity and Research Day *Fall 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