Raymond Chang

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Education

University of California, Los Angeles *Sep 2016 - Present*
MS in Physics Los Angeles, CA
Ph.D Candidate in Physics
- Interrupted from April 2021 to August 2023 due to the mandatory Korean military service.

Northwestern University *June 2016*
Bachelor of Science in Physics and Astronomy Evanston, IL

Work Experience

Data Scientist Intern, Stripe, Inc. *Jun 2024 - Current*
Data Strategy Team South San Francisco, CA
- Enhancing the risk intervention system by integrating the in-house loan product into the merchant payment risk objective function and deploying the improved strategy.
- Establishing and applying a first-principles approach to create a 3-dimensional state space framework that unifies problem definition, objective function, prediction models, and metrics, improving scalability.
- Developing comprehensive evaluation metrics to ensure coverage across both payment and loan risks, with an initial evaluation projecting a maximum opportunity gain of $3.2MM.

Data Scientist, PFC Technologies *Sep 2022 - Jul 2023*
Data Strategy Team Seoul, South Korea
- Optimized the loan approval strategy model implementation, cutting runtime from 3 days to 10 minutes, elevating the product into a viable solution for enterprise-level lenders.
- Designed and implemented a new loan performance prediction model, reducing MAPE from 41% to 6%.
- Defined the comprehensive objective function and completed code architecture for a loan profit optimization model. Its backtesting results conservatively estimate a 5-18% increase in revenue.
- Led collaboration with engineering and business teams to incorporate modern data science tools, such as Superset, MLFlow, and others, streamlining operations and standardizing documentation.

Data Scientist, Voithru Corporation *Nov 2021 - Sep 2022*
Data Team Seoul, South Korea
- Launched and managed the company's first-ever fraud detection system based on freelancer behavior logs on the company platform, detecting 1000+ fraudulent translations (5-10% of total) per month.
- Developed a novel ranking system to oversee 1,700+ freelancers, integrating 12+ performance metrics derived from feedback by product and quality management teams.
- Built and maintained Apache Superset dashboards to visualize freelancer performances and statistics.
- Implemented a bioinformatics algorithm to automate audio-subtitle matching. Improved the in-house system's time efficiency by three orders of magnitude while drastically improving the accuracy.

Research Experience

Graduate Student Researcher, University of California, Los Angeles
Calcium Imaging Analysis Project, Neuroscience Discovery Group *Sep 2023 - Current*
- Developing a robust analysis pipeline for calcium imaging and behavioral recordings, focusing on modularity, maintainability, and scalability to ensure standardized, reproducible, and meaningful data analysis across research initiatives.
- Enhancing the pipeline to incorporate upcoming analysis models, that can reflect theoretical concepts newly applicable through the cell signal data from the next generation of calcium imaging techniques.

Miniscope Project, Neuroscience Discovery Group *Jan 2019 - Apr 2021*
- Constructed a data analysis pipeline that streamlines the process of extracting the behavior modulated neuronal activities from raw data, which became the internal standard analysis package for the laboratory.
- Developed a wireless brain imaging device that can be implanted on live, unrestrained animals. Oversaw the circuit design, microcontroller codes, and data and power streaming protocols, leading to the introduction or improvement of 7+ features while maintaining the same power consumption.

Electrophysiology Signal Clustering Project, Center for Biological Physics *Dec 2016 - Jun 2017*
- Developed an algorithm for tetrode signal clustering based on the application of Monte Carlo method on a 4-D quantum Ising model.
- Improved the accuracy of detecting which brain cells the electric signals have originated from.

Technical Skills

Programming Languages, Frameworks, and Softwares
- Languages: Python, PySpark, SQL, C, Matlab
- Frameworks: Apache Spark, Docker, Kubeflow, MLFlow, Jenkins, DBT
- Softwares: EC2, Apache Superset, Fusion 360, KiCad