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Summary

- 6 years of experience using machine learning tools for data-driven scientific discovery
- 4 publications demonstrating highly productive, detail-oriented, and solution-focused nature
- 2 contracts leveraging data to deliver business solutions

Skills

- Tools: Python | Matlab | SQL | Spark | AWS S3
- Python libraries: pandas | NumPy | scikit-learn | SciPy | TensorFlow | PyTorch | PySpark | matplotlib | plotly
- Statistical learning tools: supervised learning | generalized linear models | decision trees | ensemble bagging and boosting | clustering | time-series forecasting | dimensionality reduction | SVMs | neural networks | CNNs | NLP

Experience

Doctoral Researcher – Hires Laboratory, University of Southern California Sept. 2014 – Present

- Crafted a data pipeline to collect, synchronize, and transform 30 million timepoints of sensor motion and neural recordings to answer the question: How does the brain represent touch?
- Performed feature engineering via applying domain expertise, time-series filtering, and physics models
- Established protocols to answer the question of “How does the brain represent touch?” by crafting data pipelines to collect, synchronize, and package 30 million timepoints of sensor motion and neural recordings
- Resolved a decade-long debate regarding touch search strategies using predictive behavioral modeling on 16 unique touch features, extracted via time-series filtering and physics models
- Discovered a neural representation of touch location and hypothesized a circuit model for this sensorimotor transformation using interpretable machine learning models such as generalized linear models
- Produced key findings for 2 major grants, increasing funding from \$1M to \$4.5M over 4 years, by collaborating with colleagues to author 4 manuscripts in high-impact peer reviewed journals
- Promoted a legacy of collaboration by recruiting, mentoring, and training new hires in the scientific method

Data Science Contractor Aug. 2019 – Present

- Sene Studio
 - Ensured data quality and improved accessibility to data by replacing disorganized spreadsheets with an automated extract, transform, load (ETL) workflow with data warehousing in AWS S3 and postgresSQL
 - Reduced order returns and costs by 38% (\$58k), leading to a 30% increase in positive customer review, using a boosted regression model to optimize fit for made-to-measure suits and jeans
- Structure Research
 - Standardized metrics, improved data quality, and saved days of manual calculations for a premier data center research group by building an automated analyses pipeline in Python

Notable Publications, Awards, and Achievements

Kim J, **Cheung JA**, Hires SA (2020) – Behavioral and neural bases of tactile shape discrimination learning in head-fixed mice (*Neuron*)

Cheung JA, Maire P, Kim J, Lee K, Flynn G, Hires SA (2020) – Active touch remaps barrel cortex output from a representation of self-motion to object location. (*submitted; PLoS Biology*)

Top Presentation in Systems Neuroscience 2018 (*USC Annual Research Symposium*)

National Institute of Health Intramural Research Training Award 2013-2014 (*National Institute on Aging*)

Education

Ph.D. Neuroscience

University of Southern California
Los Angeles, CA / 2020

B.S. Human Biology

University of California, San Diego
San Diego, CA / 2013