

# JONATHAN A. CHEUNG

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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**

## Experience

**Doctoral Researcher** – Hires Laboratory, University of Southern California Sept. 2014 – Apr. 2020

- 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
- Generated more accurate behavioral and neural models through creative feature engineering via applying domain expertise, time-series filtering and physics models
- Resolved a decade-long debate regarding touch search strategies using predictive behavioral modeling on 16 uniquely extracted touch features
- 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 PostgreSQL
  - 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
  - Improved customer experience and web traffic by 20% through application of an interactive data visualization monthly newsletter

## 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

## Notable Publications, Awards, and Achievements

**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