Prajal Bishwakarma

Email : prajal.b@gmail.com
Seattle, WA
Mobile : 914-282-9893

Education

- **College of William & Mary** — Williamsburg, VA
  B.S. Neuroscience, Minor: Computer Science — *August 2013 – May 2017*

Research Experience

- **College of William & Mary** — Williamsburg, VA
  Undergraduate Research Assistant; Advisor: Mainak Patel — *September 2015 - May 2017*
  - Investigated network interactions underlying gamma oscillation frequency modulation by activation of NMDA recepters in CA3 subregion using integrate-and-fire neuron model
  - Built model in Python, sourcing model parameters from literature
  - Built signal processing pipeline for local field potential and spiking frequency time series data from simulations
  - Created data visualizations and figures of model behavior in R
  - Received NSF funded EXTREEMS-QED grant to conduct and present work in summer research program
  - Wrote and defended undergraduate honors thesis, *The Mechanism of NMDA Receptor Mediated Increase in Gamma Oscillation Frequency*

Professional Experience

- **Allen Institute for Brain Science** — Seattle, WA
  Scientific Data Engineer III — *January 2022 - Current*
  - Led team of four engineers in building validation and extract, transform, load (ETL) pipelines for scientific data products
  - Built ETL pipeline in Python for single cell/nucleus RNAseq and spatial transcriptomics data in the Allen Brain Cell Atlas
    - Implemented transformers for whole mouse brain scale gene expression data stored in Anndata and SOMA formats for ingest into the Brain Knowledge Platform (BKP)
    - Implemented transformers for cell type taxonomy annotations for ingest into BKP
    - Interfaced with senior scientists to translate scientific organization of data to technical requirements for engineering teams
  - Productionized ETL pipelines to run on AWS and HPC systems using Cromwell workflow manager
  - Developed standards for metadata schemas in the BRAIN Initiative Cell Atlas Network (BICAN) consortium
    - Promoted Findability, Accessibility, Interoperability, and Reusability (FAIR) principles for data sharing in consortium by proposing standards for APIs
  - Developed general ETL pipeline that supported data releases for various projects in the BKP Data Catalog:
    - BICAN Rapid Release - catalog of post-QC fastq files and associated sample metadata from BICAN omics projects
    - Genetic Tools Atlas - catalog of enhancer-adeno-associated viruses targeting cell types
    - SEA-AD Donor Index - catalog of donor metadata and neuropathology data from members of Seattle Alzheimer's Disease Brain Cell Atlas consortium
  - Built integrations with multiple services supporting migration of data from monolithic laboratory information management system to service oriented architecture
  - Built data intake web application for projects and data collections metadata in the BKP Data Catalog
  - Mentored intern in implementing integration with service that tracks digital assets

- **Ernst & Young** — Arlington, VA
  Senior Software Engineer — *December 2019 – February 2021*
  Client: Pharmaceutical Firm
  - Led team of four developers in Identity and Access Management (IAM) system implementation in Java
  - Designed, implemented and documented features of IAM system
  - Drafted qualification documentation for system implementation and deployment
  - Managed project timeline and engineering backlog

  Client: Manufacturing Firm

- Co-authored assessment of client IAM practices regarding existing Amazon Web Services (AWS) infrastructure
- Developed prototype integration between AWS IAM and client's existing IAM system
- Demonstrated prototype functionality both to internal and client leadership

Internal: Internship Project

- Architected and built front-end infrastructure for IAM system performance dashboard
- Led code reviews and mentored interns in engineering practices

- **Sila Solutions Group (Acquired by Ernst & Young)** Arlington, VA
  Software Engineer *July 2018 - December 2019*
  Client: Financial Services Firm
  - Led team of developers/analysts in IAM feature implementation
  - Presented project progress at weekly status meetings with client leadership
  - Mentored new developers in engineering practices

- **Booz Allen Hamilton** Tyson's Corner, VA
  Software Engineering Consultant *September 2017 - July 2018*
  - Built RESTful API for search application in Python
  - Implemented unsupervised, corpus agnostic named entity recognition algorithm
  - Presented prototypes to senior leadership and potential clients

- **College of William & Mary** Williamsburg, VA
  Tribe Athletics Tutor *September 2016 - May 2017*
  - Tutored athletes in intro physics, chemistry, calculus and computer science

- **College of William & Mary** Williamsburg, VA
  Chemistry Lab Teaching Assistant *September 2015 - May 2016*
  - Led weekly undergraduate lab sessions in General Chemistry I/II

Publications

- Ben-Simon, Yoav et al. A suite of enhancer AAVs and transgenic mouse lines for genetic access to cortical cell types. Cell, Volume 188, Issue 11, 3045 - 3064.e23. doi: https://dx.doi.org/10.1016/j.cell.2025.05.002
- Hunker, Avery C. et al. Enhancer AAV toolbox for accessing and perturbing striatal cell types and circuits. Neuron, Volume 113, Issue 10, 1507 - 1524.e17. doi: https://dx.doi.org/10.1016/j.neuron.2025.04.035
- Yao, Z., van Velthoven, C.T.J., Kunst, M. et al. A high-resolution transcriptomic and spatial atlas of cell types in the whole mouse brain. Nature 624, 317–332 (2023). https://doi.org/10.1038/s41586-023-06812-z
- Hawrylycz M, Martone ME, Ascoli GA, Bjaalie JG, Dong H-W, Ghosh SS, et al. (2023) A guide to the BRAIN Initiative Cell Census Network data ecosystem. PLoS Biol 21(6): e3002133. https://doi.org/10.1371/journal.pbio.3002133

Projects

- **groupbool.xyz**: Static music discovery and analytics blog. Built with GCP functions that aggregate Spotify data.
- **sentfrag**: Natural language processing implementation of editing techniques from "The Sense of Structure" by George D. Gopen