Shashank Bansal

shashankbansal56@gmail.com | (217)-991-0892 | | in

EDUCATION

M.S. in Bioengineering — UC, San Diego
GPA: N/A, College of Engineering — June 2024 | La Jolla, CA

B.S. in Computer Engineering with Honors — Univ. of Illinois Urbana-Champaign
GPA: 3.53, College of Engineering — May 2019 | Champaign, IL

CURRENT POSITIONS

STANFORD UNIVERSITY — Research Assistant
Poldrack Lab, Prof. Russell Poldrack (PI) — Sept 2019 - June 2022
Stanford Center for Reproducible Neuroscience, Prof. Russell Poldrack (PI)

NON-DEFACED DETECTOR — **ADVISOR: DR. OSCAR ESTEBAN**

- Developed a tool using a modified U-Net architecture in tensorflow and a novel augmentation strategy to detect defaced 3D MRI T1w images
- Demonstrated a state-of-the-art performance estimate on a held-out dataset with real-faces and obtained accuracy/sensitivity/specificity scores of 0.978/0.983/0.972 respectively
- Acquired neuroimaging data on a high performance compute cluster (TACC), labeled and conducted quality control and wrote scripts for parallel and efficient pre-processing on the entire dataset using slurm

NARPS MULTIVERSE ANALYSIS — **ADVISOR: DR. CHRISTOPHER MARKIEWICZ**

- Contributed to the novel BIDS StatsModels (BSM) specification that provides a machine-readable representation of GLMs and increases the precision of model specification, facilitating peer review, reproducibility and fully automated pipelines using a graph-based structure for multi-level fMRI analysis
- Re-factored code for the open-source tool called FitLins to incorporate the new BSM specification allowing for more diverse pipelines and wrote new models for hierarchical fMRI analysis
- Currently working on extending the tool for mega/multiverse analyses and Same Data Meta Analysis (SDMA) in conjunction with Dr. Thomas Nichols team at the Oxford Big Data Institute

NVIDIA CORPORATION — Systems Software Engineer II
Christian MacNevin, Manager — Full-time, Aug 2019 - June 2022

- Lead architect on an infrastructure resource modeling Django web-application for autonomous network management and designed a highly available and scalable fault tolerant infrastructure in AWS to support the application
- Built a large-scale fully automated telemetry platform using osquery to collect data and perform customized tests to provide insights into the user experience on any OS in different modalities (vpn, wifi, lan)
- Developed network and infrastructure tools for continuous and automated delivery and deployments using terraform and saltstack

PREVIOUS ACADEMIC EXPERIENCE

UNIV. OF ILLINOIS URBANA-CHAMPAIGN — Research Assistant
NCSA - Dept. of Atmospheric Sciences, Prof. Larry Di Girolamo (PI) — May 2017 - May 2018

TERRA DATA FUSION — **ADVISOR: PROF. LARRY DI GIROLAMO**

- Data modeling on the NASA-funded Terra Data-Fusion project with Prof. Larry Girolamo and developed code for big-data analysis for Terra satellite
- Researched network models for cloud detection to isolate different cloud formations from pollutants
- Developed automation tools for file-verification, secure error handling, corrupt file identification on the Blue Waters supercomputer and set up visualization software for hdf files in the Atmospherics Sciences Visualization Studio

UNIV. OF ILLINOIS URBANA-CHAMPAIGN — Research Assistant
Micro & NanoTechnology Lab, Dr. Lisa Plucinski, Prof. Gang Logan Liu (PI) — Feb 2017 - April 2017

PORTABLE PLATFORM FOR PLASMONIC NANOCAVITY SENSOR **ADVISOR: DR. LISA PLUCINSKI**

- Worked with Dr. Lisa Plucinski and Prof. Gang Logan Liu to model and fabricate a portable setup for smartphone-based nanoplasmonic imaging platform for colorimetric biochemical sensing for early cancer biomarker detection.
- Responsible for optimizing device models, evaluating reliability and achieving a linear calibration curve at different wavelengths using image processing

PUBLICATIONS & POSTERS

- **Bansal, S.** , Kori A., ... Poldrack R. A., Oscar Esteban. High-sensitivity detection of facial features on MRI brain scans with a convolutional network. https://doi.org/10.1101/2021.04.25.441373 [Code]
- Jeanette A. Mumford, Christopher J. Markiewicz, **Shashank Bansal** , Russell A Poldrack. Connecting BIDS Statistical Model specifications to FSL-based fMRI analyses. OHBM 2022. [Link]
- Christopher J. Markiewicz, **Shashank Bansal** ., ... Tal Yarkoni. BIDS Statistical Models: Implementation-independent representation of the general linear model. OHBM 2021. [Link]
- Markiewicz, Christopher J., ... **Bansal, Shashank** ., ... Fitlins: Fitting Linear Models to BIDS Datasets. Zenodo. [Code]
- Yarkoni, Tal, Markiewicz, Christopher J., ... **Bansal, Shashank** ., ... (2021, April 16). PyBIDS: Python tools for BIDS datasets (Version 0.13). Zenodo. http://doi.org/10.5281/zenodo.4695415 [Code]
- Kaczmarzyk, Jakub, McClure, Patrick, ... **Bansal, Shashank** ., ... neuronets/nobrainer: 0.1.0. Zenodo. 10.5281/zenodo.4995078
- **Shashank Bansal** , Marcos Garcia, Lisa Plucinski. Portable Platform for Plasmonic Nanocavity Sensor. [link]

ACADEMIC RESEARCH PROJECT

IS IT POSSIBLE TO IMPROVE MEMORY RETRIEVAL IN HUMANS?

Advisor: Dr. Nnamdi Nelson Jan 2019 - May 2019

- Proposed specific mnemonic techniques to demonstrate a process that would encode an array of diverse information (characters, words and colors) more efficiently into the human brain
- Presented methods that would achieve results by comparing the functional connectivity of memory athletes and naive participants before, during and after the mnemonic training

OPEN-SOURCE CONTRIBUTIONS

poldracklab / nondefaced-detector
bids-standard / pybids
poldracklab / fitlins
neuronets / nobrainer
bids-standard / model-zoo
TerraFusion / basicFusion

TEACHING & VOLUNTEER POSITIONS

CodePath Mentor May 2021 - Aug 2021

- Volunteered as a codepath tech mentor to help 6-7 students from under-represented communities develop critical thinking/programming skills for careers in the tech industry and support the next generation of tech professionals

Teaching Assistant | CS 461, CS 460, CS 498 DF 1 & DF 2 Spring & Fall 2018, Spring 2019

- Assisted the professor with instructional responsibilities and helped with lesson planning, assignment development, exam material, grading, holding office hours and detailed student feedback for a cohort of 100 students

PROGRAMMING SKILLS

Advanced:
Python • C++ • Git

Intermediate:
Go • C • Django • Salt

Familiar:
Javascript • Java • Clojure

SOFTWARES

Industry : AWS, kubernetes, docker, grafana, tableau, osquery
Academia/Neuro : fMRIPrep, NiPype, Datalad, MRIQC, BIDS, SPM, Nilearn, AFNI, Tensorflow, pytorch

AWARDS, HONORS & STUDENT ORGANIZATIONS

Awards and Honors

Dean's List | Spring 2016
James Scholar | Fall 2017 - Spring 2019

Student Organizations

IEEE | Technical Events Committee Director
Technical Advancement Group - AI | Director | Spring 2018-2019