Ashkan **Alvand** (Ph.D.)

https://ashkan-alvand.com/ | linkedin.com | github.com

Recent PhD graduate with experience working in cross-functional institutional research teams. Specific expertise in developing and optimising data collection and analysis pipelines for large multimodal image datasets, statistical analysis and graph theory algorithms. Complemented with key strengths of communication, critical thinking and managing completion of data projects to stakeholder requirements.

EDUCATION

2018-2024	University of Auckland	Doctor of Philosophy, Psychology
2014-2016	Azad University	Master of Engineering (1st Class Honors), Information Technology
2010-2014	University of Mazandaran	Bachelor of Engineering, Information Technology

WORK EXPERIENCE

Liggins Institute, Auckland, NZ

Postdoctoral Research Fellow, Feb 2023 - Sep 2023

- Analyzed large multimodal datasets (1+ TB) on two computer vision projects with 200+ subjects' data
- Secured $8k funding for high performance computing (HPC, Mac OS), maintained and configured data repositories on cloud computing platform (NeCTAR) and conducted data organisation (connection through WinSCP, SSH, PuTTY)
- Developed and optimised processing and analysis pipelines using Bash, Matlab and Python (Nileran, Nibabel) for semi-automated image segmentations, registration, noise reduction and feature extractions
- Developed statistical analysis pipelines on randomised control trial dataset using *t*-test, histogram and multivariate permutation tests (Matlab, SAS) for investigating biomarkers (i.e., trends) on babies' brain
- Communicated insights with multidisciplinary teams by writing 4+ reports and presentations

University of Auckland, NZ

Doctoral Researcher, July 2018 - Dec 2022

- Authored/co-authored 5 original research articles published in peer-reviewed journals, contributing to manuscript writing, design of controlled hypothesis-driven experiments, literature reviews, data plotting (Python, Matlab), schematic drawing, and statistical analysis
- Secured $10k internal funding for purchasing supercomputer (Ubuntu machine), including installation and troubleshoot of OS, software and analytical tools for neuroimaging computing
- Developed an image processing and analysis pipeline for multimodal imaging dataset (s/f/dMRI) using Matlab, Bash, docker, Python (Tedana, Nilearn, Nibabel), for semi-automated image segmentation, registration and denoising, which was subsequently published
- Created and optimised 15+ pipelines for implementing graph theory algorithms (community detection, random forest etc.) utilizing Matlab and Python (Networkx) with the methodology and results published in top tier journal here and here
- Conducted two large-scale human project on 70+ clients by designing project's plans, writing 10+ SOPs and strategizing data collection (recruitment, experiment, survey, questionnaire, interviews)
- Mentored postgraduate students (1 Master's), tutored course labs for 100+ graduate students and volunteered as a committee member in multiple student-led societies for organizing workshops/seminars/events

- Collaborated with international researchers on two global research projects for improving cross-species neuroimaging pipelines, published in top tier journal of Neuron

- Managed $80k in research funding, authored mobility grant applications, and securing over $7k in funding for conference travel from multiple research institutions such as EMC

FEATURED PROJECT

Analysis of brain networks in children with APD
Identifying functional biomarkers in the brains of children diagnosed with APD

- Implemented graph theory frameworks using Matlab, Bash and C++ for applying community clustering algorithms (Louvain, Infomap, Leiden), hub detection as well as topology-based algorithms for modeling and finding relationship (i.e., networks) on data points

- Implemented several evaluation pipelines such as 1) intra/inter subject reproducibility tests for comparing different methods for accurately segmenting brain regions in paediatric population (70% accuracy), 2) modularity consistency test across network density thresholds, 3) performance and efficacy tests such as pearson's r, Spearman' rho and temporal DOF (Matlab) on fMRI denoising pipelines, resulted with 20% improvement in pipeline denoising accuracy

- Implemented multivariate statistical tests in Matlab and SPSS such as t-test, ANOVA, ANCOVA, GLM, permutation, correlation and meta-analytical tests for assessing brain-behavior relationship

- Wrote Bash scripts and utilised Python packages (e.g., Pybids) and neuroimaging tools (e.g., dcm2niix) for structuring and formatting multimodal dataset

- Processed and visualized fMRI time series for extracting signal from noise based on Matlab and Python (Nilearn, Pandas) tools in imaging platform (e.g., FSLeye)

- Visualized study results using MATLAB visualization functions and Python (e.g., Nilearn, Scipy, Matplotlib) for plotting data distributions, brain's region of interests and network simulation

TECHNOLOGIES

MATLAB, Python, Docker, Git, Linux, SPSS, SAS, Office suite, NeCTAR

AWARDS

- Eisdell Moore Centre mobility grant ($2k NZD) Nov 2022
- Travel award from Child Mind Institute ($1.2k USD) Sep 2019
- Faculty of Science full tuition award ($36k NZD) 2018-2022

CERTIFICATION/TRAINING

- MATLAB: LinkedIn Skill Assessment
- Linux: LinkedIn Skill Assessment
- Bash: LinkedIn Skill Assessment
- Python: LinkedIn Skill Assessment
- Power BI: Dashboards, LinkedIn
- Fundamental of R programing: Nov 2018
- Ngā Paerewa Te Tiriti: Nov 2023