Ashkan Alvand

Biography

I completed my Bachelor of Science in Information Technology through the national university of Mazandaran (2014) and then received my master's degree in Computer Networking at Azad University (2016). During my master's program, I became familiar with graph theory in biological systems and developed a strong interest in this approach. Currently, I am doing my Ph.D. in Psychology under the supervision of Prof. Suzanne C. Purdy and Prof. Ian J. Kirk at the University of Auckland. My doctoral thesis investigates the topological networks of children with Auditory Processing Disorder using resting-state functional MRI and diffusion MRI.

WORK EXPERIENCES

Ph.D. thesis **July 2018 - present**
Graph theory analysis of functional and structural connectivity: Link with Auditory Processing Disorder

Graduate Teaching Assistant (GTA) **Mar 2021 - present**
Assistant teacher in the course *Psych 202*, Biopsychology

Research Assistant **July 2018 - present**
School of Psychology, University of Auckland, Auckland, New Zealand
Ongoing Project - Graph analysis of functional connectivity on individuals with Mild Cognitive Impairments (MCI)

Research Associate **Mar 2016 - Mar 2018**
Institute for Cognitive and Brain Sciences, Shahid Beheshti University, Tehran, Iran
Project outline - Analyzing functional and anatomical MRI images with the complex network approach

EDUCATION

- **Qualification:** Doctor of Philosophy in Psychology **July 2018 – present**
  Provider: University of Auckland
- **Qualification:** Master of Information Technology in Computer Networking **Oct 2014 – Aug 2016**
  Provider: Azad University, Garmsar Branch
- **Qualification:** Bachelor of Information Technology **Oct 2010 – Sep 2014**
  Provider: University of Mazandaran

Publications/Conference posters/Invited talks

- Milham, M., Petkov, C. I., Margulies, D. S., Schroeder, C. E., Basso, M. A., Belin, P., ... & Messinger, A. (2021). **Towards Next Generation Primate Neuroscience: A Collaboration-based Strategic Plan for Integrative Neuroimaging.** Manuscript accepted for publication**.**
- Farnaz Faridi, Ashkan Alvand, Reza Khosrowabadi (2020). **Brain structural correlates of intelligence in ADHD individuals**, *Basic & Clinical Neuroscience.* http://dx.doi.org/10.32598/bcn.2021.2244.1.
- Milham, M., Petkov, C. I., Margulies, D. S., Schroeder, C. E., Basso, M. A., Belin, P., ... & Messinger, A. (2020). **Accelerating the evolution of nonhuman primate neuroimaging**. Neuron, 105(4), 600-603. **DOI:** 10.1016/j.neuron.2019.12.023

Poster presentation

- Ashkan Alvand, Reza Khosrowabadi, Kaveh Kavousi "**Graph analysis of brain functional connectivity in ADHD using task-free fMRI**", the 5th international conference on basic and clinical neuroscience, Tehran, Iran, December 2016.
- Ashkan Alvand*, Suzanne C. Purdy, Reece Roberts, Tracy Melzer, Catherine Morgan, Lynette J Tippett, Ian J Kirk and the BRNZ Collaboration "**Large-Scale network analysis of functional connectivity in Individuals with Mild Cognitive Impairment and Alzheimer Disease"**, BRNZ conference, Queenstown, New Zealand, April 14-16, 2021.

Oral presentation

- Seventeenth annual InHouse symposium: ***graph theory analysis of functional connectivity, links with central auditory processing***. Organized by school of Psychology at the University of Auckland (Feb 21, 2020).
- Cogneuro talk series***, Brain Functional Organization of children with Auditory Processing Disorder: Network Neuroscience approach***, Organized by department of Psychology at the University of Auckland (June 18, 2021).

Training/Course

- **PRIME-DE Workshop** **Sept 5-6, 2019**
  Held by Child Mind Institute and National Institute of Health (NIH) at the Wellcome Trust in London.
- **Mini FSL course** **Feb 18-22, 2019**
  Held by the University of Oxford, Dunedin, New Zealand, Funded by the University of Auckland
- **Workshop on Cutting-edged methods for research on cognition** **Nov 2016**
  Combining EEG & Eye-Tracking: Theory & Practice, Institute for Cognitive and Brain Sciences, Shahid Beheshti University, Iran, Humboldt University, Berlin, Germany
- **Psychological Task Development Workshop** **Aug 2016**
  Held by Institute for Cognitive & Brain Sciences, Shahid Beheshti University.
- **MRI Course** **April-June 2016**
  Held by Institute for Cognitive and Brain Sciences, Shahid Beheshti University, Tehran, Iran,

SKILLS & ATTRIBUTES

Neuroimaging applications

- f/MRI data preprocessing and denoising: Using open-source and inhouse pipelines such as fmriprep, scrubbing, Spike regression, ICA-AROMA, ICA-FIX, CompCore, and GLM (General Linear Modelling) for cleaning f/MRI data
- Multi-echo fMRI data preprocessing
- Graph theory analysis including constructing brain connectivity matrix, brain graph, global and nodal measures analysis, Dynamic connectivity, Brain null models, Edge-centric connectivity
- ICA (Independent Component Analysis): Mathematical model for analyzing fMRI data
- Diffusion MRI data preprocessing using open-source methods such as QSIprep, MRtrix3, and FSL
- Tractography and fiber reconstruction
- Clinical Participant recruitment for MRI
- MRI data acquisition
- Quality control measure in fMRI and diffusion MRI processing
- Neuroimaging Statistical analysis

Neuroimaging Software

- FSL (FMRIB Software Library): Neuroimaging software for preprocessing and processing f/MRI data
- SPM: (Statistical Parametric Mapping): Neuroimaging software for f/MRI and EEG data processing
- AFNI (Analysis of Functional Neuroimage): fMRI processing software
- FreeSurfer: Software for anatomical and functional surface-based analysis
- BrainNEt viewer: Software for visualizing f/MRI data

- BCT (Brain Connectivity Toolbox): MATLAB based graph analysis toolbox for analyzing functional connectivity
- MRIcron: Software for visualizing f/MRI data
- MRtrix3: Software for preprocessing, analysis, and visualization of DWI
- NBS: Network-based statistic
- DSI studio
- PALM: Permutation Analysis of Linear Models

Computer and IT skills

- Programming: MATLAB, Python, Shell scripting, git
- Windows (XP,7,8.1,10) and Office package (Word, Excel, Access, PowerPoint)
- Adobe Photoshop, After effects, lightroom, illustrator
- Linux Ubuntu

Honors/Awards

- Travel award for attending PRIME-DE workshop in September 2019
- Ranking first in GPA among all M.Sc. students at the Azad University of Garmsar, 2016

Membership

❖ Member of Post-Graduate Staff/Student Advisory Committee (PGSSAC) **Nov 2020- present**

❖ Member of Organization of Human Brain Mapping (OHBM) **April 2020 – present**

❖ Member of PRIMatE Data Exchange (PRIME-DE) group **Sept 2019 – present**

❖ Committee member of Early Career Researcher (ECR) at Center for Brain Research (CBR) **May 2019 - present**

❖ Member of Neuroimaging Research Group (NRG) at the University of Auckland **July 2018 - present**

- Developing and evaluating preprocessing and denoising methods in resting-state data Such as Multi-echo fMRI data, DTI data

❖ Member of New Zealand Neurological Foundation **July 2020 - present**

❖ Member of Eisdell Moore Centre (EMC) **July 2018 – present**

- Associate investigator

❖ Member of Brain Research New Zealand (BRNZ) early career researcher **July 2018 - present**