Linden Parkes, Ph.D.

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Education

- **Monash University** — Melbourne, Australia
  Doctor of Philosophy — *2014 – June 2019*
- **Swinburne University of Technology** — Melbourne, Australia
  Bachelor of Science (Psychology, Psychophysiology) — *2009 – 2013*
  Honours (capstone research project), First Class, Dux (top of the class)

  Relevant Coursework: Statistics, Design & Research Methods, Technology & Data Acquisition, Advanced Quantitative Methods

Experience

- **The University of Pennsylvania** — Philadelphia, PA
  Postdoctoral Research Fellow — *March 2019 - Present*
  - **Predictive Modeling**: Performed anomaly detection in normative models of brain development
- **The University of Pennsylvania** — Philadelphia, PA
  Teaching Assistant — *Fall 2019*
  - **Guest Lecturer**: Preparation and delivery of teaching material for a class on Network Neuroscience
- **Donders Institute for Brain, Cognition and Behaviour** — Nijmegen, The Netherlands
  Visiting Research Fellow — *Sept. 2018 - Oct. 2018*
  - **Predictive Modeling**: Contributed to development of Python library used by institute and collaborators
- **Torus Games** — Melbourne, Australia
  Visiting Research Fellow — *March 2016 - Oct. 2017*
  - **Firebase**: Built workflows for ingest and storage of data in Firebase. Wrote code to download and process data used by other scientists. Code available upon request

Projects

- **Anomaly detection in brain development**: Academic Science. Predictive modeling project in brain development throughout childhood and adolescence. Detected developmental brain abnormalities associated with psychiatric disorders. Predictive models trained with **Gaussian process regression** including statistical anomaly detection incorporating **aleatoric and epistemic uncertainty**. All code written in **Python** using **Jupyter notebooks** and publically available on my Github.
- **Genetic signatures of the human subcortex**: Academic Science. Application of **unsupervised (*k-means clustering*) and supervised (*support vector machines*) machine learning** to the intersection of human brain imaging and genetics. Paper published in leading **peer-reviewed journal**. Publication ranked in the **top 20 downloaded** from the journal in 2017.
- **Processing and quality control of brain imaging data**: Academic Science. Designed and wrote pipelines for processing of large brain imaging datasets, including quality control reports. Implemented pipelines on multiple open-access datasets used for subsequent projects by myself and other scientists. Paper, including recommendations for the field, published in leading **peer-reviewed journal**. All code publically available on my Github. Publication ranked by the journal in the **top 20 downloaded** and in the **top 0.01% most cited** publications in 2018 in the field of Neuroscience.
- **Causal models of brain circuits in psychiatric disorders**: Academic Science. Generative models of brain dynamics to assess dysfunction in brain circuits in psychiatry. Paper published in leading **peer-reviewed journal**. All code publically available on my Github.
- **Emotion processing in language**: Undergraduate capstone research project examining how the brain responds to emotionally-loaded sentences that include a mismatch in emotional context. **Thesis received highest grade in cohort**. Paper published in leading **peer-reviewed journal**.

Skills

- **Machine Learning**: Classification, Unsupervised Clustering, Regression (Linear, Non-linear, Regularized), Cross-validation, Model Scoring, Parameter Tuning, Feature Selection & Standardization, Dimensionality Reduction
- **Statistics**: Experimental Design (e.g., A/B Testing), Null Hypothesis Testing, Analysis of Variance, Data Resampling (e.g., permutation, bootstrapping), Dependent Data (e.g., repeated measures), Bayesian Inference, Time Series Analysis, Network Science
- **Coding**: Python (Pandas, NumPy, SciPy, Scikit-Learn, Pingouin, Statsmodels, Matplotlib, Seaborn), Matlab, Shell, Git, Linux OS, LaTeX; Familiar with: SQL