Gavin J. Mooney

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Computing Science PhD candidate at Monash University with strong experience in Python-based data analysis, visualisation, experimental evaluation, and technical communication. Research focuses on evaluating graph drawings through quantitative readability metrics and human-centred studies, requiring reproducible analysis, statistical reasoning, and clear presentation of complex results. Familiar with pandas, NumPy, scikit-learn, SQL, Jupyter, matplotlib, Plotly, D3.js, and R, with an interest in applying data science methods to scientific, engineering, and clean-tech data problems.

Skills

Technical Skills	Python, pandas, NumPy, scikit-learn, SQL, Jupyter, matplotlib, Plotly, D3.js, JavaScript, R, Git, Unix, LaTeX
Data Science & Analysis	Statistical analysis, experimental design, data cleaning, exploratory data analysis, applied machine learning, visual analytics, human-centred evaluation, graph/network analysis, technical reporting
Machine Learning	Applied machine learning experience, including scikit-learn for exploratory modelling, classification/regression workflows, and evaluation of model performance
Databases	Working knowledge of SQL and relational databases, including querying, filtering, joining, and preparing data for analysis
Visualisation	Interactive data visualisation, network visualisation, dashboard-style web visualisations, data storytelling, visual analytics
Research & Communication	Academic publishing, reproducible analysis, teaching, and presentation of complex technical findings

Education

PhD Computing Science Feb 2023 – Present (expected Aug 2026)
Monash University, Clayton, Australia
Supervisors: Prof Helen Purchase and A/Prof Michael Wybrow
Thesis: Quantifying Readability: The Evaluation and Perception of Graph Drawings.

MSci Computing Science (1st Class Honours) June 2022
University of Glasgow, United Kingdom

Research and Data Analysis Experience

PhD Researcher, Graph Drawing and Data Visualisation Feb 2023 – Present
Monash University, Faculty of Information Technology, Clayton

- Researching how computational quality metrics for graph drawings relate to human perception, preference, and task performance.
- Designed and analysed human-subject experiments comparing visual readability metrics with observed user behaviour and task outcomes.
- Developed reproducible analysis workflows for evaluating graph drawing quality across diverse graph datasets and drawing algorithms.
- Communicated quantitative findings, uncertainty, and methodological trade-offs through peer-reviewed publications, conference presentations, and interactive visualisations.
- Published work at leading visualisation and graph drawing venues, including a Best Paper Award at IEEE PacificVIS 2024.

Work Experience

Assistant Lecturer (PhD Teaching Fellow) Feb 2025 – Present
Monash University, Faculty of Information Technology, Clayton

- Teaching FIT5147 (Data Exploration and Visualisation) and contributing to FIT2179 (Data Visualisation), including face-to-face teaching, marking, consultations, and student support.
- Developing unit materials and assessments, including a network visualisation assessment using D3.js and graph drawing research.
- Supporting students with data cleaning, exploratory analysis, visual encoding, interaction design, and effective communication of analytical findings.
- SETU teaching scores consistently High or Very High (most recent: 88/100), exceeding the faculty average.

Sessional Teaching Associate Jul 2023 – Feb 2025

Monash University, Faculty of Information Technology, Clayton

- Delivered workshops and applied sessions for FIT5147, FIT3179 (Data Visualisation), and FIT1049 (IT Professional Practice).
- Served as Head Tutor for FIT3179 (Semester 2, 2024), coordinating the teaching team and managing unit administration.
- Guided students on data visualisation projects involving data preparation, exploratory analysis, interaction, and written interpretation.

Graduate Teaching Assistant Aug 2021 – Jun 2022

University of Glasgow, School of Computing Science, United Kingdom

- Ran labs for senior undergraduate and masters students; managed 12 colleagues assisting with junior labs.
- Assisted with marking of assessed coursework and examinations.

Selected Publications

[1] G. J. Mooney, J. Miller, M. Wybrow, S. G. Kobourov, and H. C. Purchase. *Stress in Graph Drawings: Perception, Preference, and Performance.* In Proc. 33rd International Symposium on Graph Drawing and Network Visualization (GD), 2025.

[2] G. J. Mooney, A. Wolff, T. Hegemann, M. Wybrow, and H. C. Purchase. *Universal Quality Metrics for Graph Drawings: Which Graphs Excite Us Most?* In Proc. 33rd International Symposium on Graph Drawing and Network Visualization (GD), 2025.

[3] L. Joos, G. J. Mooney, M. T. Fischer, D. A. Keim, F. Schreiber, H. C. Purchase, and K. Klein. *Show Me Your Best Side: Characteristics of User-Preferred Perspectives for 3D Graph Drawings.* In Proc. 33rd International Symposium on Graph Drawing and Network Visualization (GD), 2025.

[4] G. J. Mooney, H. C. Purchase, M. Wybrow, S. G. Kobourov, and J. Miller. *The Perception of Stress in Graph Drawings.* In Proc. 32nd International Symposium on Graph Drawing and Network Visualization (GD), 2024.

[5] G. J. Mooney, H. C. Purchase, M. Wybrow, and S. G. Kobourov. *The Multi-Dimensional Landscape of Graph Drawing Metrics.* In Proc. 17th IEEE Pacific Visualization Symposium (PacificVIS), 2024. **Best Paper Award.**

A full list of publications is available at gavjmooney.com.

Awards and Invitations

Best Paper Award – 17th IEEE Pacific Visualization Symposium (PacificVIS), 2024

Invited participant – Dagstuhl Seminar on Perception-Informed Network Visualization

Service

Peer reviewer for IEEE TVCG, VIS and PacificVIS.

Interests

Music, bass guitar, travelling, snowboarding, chess, reading, walking, technology, video games, art.