Kenneth N. Reid, Ph.D.

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Positioning Statement

As a data scientist at the University of Michigan, I use my expertise in statistical analysis, machine learning, and software development to gather, manage, and analyze real-world data. With a strong proficiency in SQL, Python, R, Java, and others, I develop interactive dashboards and web applications to visualize and present the insights gained from the data. I work collaboratively with other teams, external companies and researchers, to identify and leverage internal and external data sources for the purpose of identifying and refining prospect lists for fundraising activities, and produce robust data models for publications. Through my work, I am committed to maintaining a holistic approach that supports diversity, equity, and inclusion. I am a Scottish citizen that requires visa sponsorship (H1-B).

Overview - Timeline

Data Scientist at UoM MIDAS	04/2024 -
Research Associate at MSU Computer Science Department	01/2023 - 04/2024
Research Associate at MSU Animal Science Department	11/2019 - 01/2023
Research Assistant (3 Separate Projects) at University of Stirling (UoS)	04/2019 - 10-2019
INTO UoS **Module Coordinator**	01/2017 - 12/2018
Teaching Assistant at UoS	05/2015 - 04/2019
Ph.D. Student in Computing Science, UoS	05/2015 - 07/2019
Technical Graduate at Hewlett Packard Enterprise Services	08/2013 - 04/2015
B.Sc. with Honours in Computing Science	08/2009 - 05/2013

Work Experience

Data Scientist

- Leveraging data for social impact and driving **scientific exploration** in an ethical and compassionate direction.
- **Transforming real-world data** into action using **statistical analysis, data mining, and machine learning**.
- Programming, algorithm development, data management, analysis, and **visualization**.
- Outreach and usability testing.
- Holistic commitment to diversity, equity, and inclusion.

Post-doc

- Applied **machine learning**, evolutionary algorithms and **data science techniques** to: 1) improve accuracy of genomic prediction, 2) schedule 25,000 employees for a large telecommunications company in the UK (British Telecommunications Plc.), 3) **analyze satellite imagery with machine learning** to identify water bodies for predicting malaria outbreaks, 4) optimize LLVM pass sequences and optimize the LLVM **compiler**, 5) applied to large grant bodies (NSF & US-DOA).
- Developed and implemented **data visualization** techniques to communicate complex information to lay audiences
- **Pre-processed large datasets** to reduce noise, select features, and improve the efficiency of run-time.
- Worked in teams of various expertise and **effectively communicated complex ideas**.

Ph.D. & INTO

- Worked onsite with British Telecommunications Plc. R&D team on software design & development, **data manipulation** and visualization.
- Learned theoretical & practical optimization & prediction techniques.
- Completed a thesis comprising of 3 individual research publications and software.
- Applied and learned statistical techniques for **analyzing massive datasets** and mining insights.

Hewlett-Packard EnterpriHP Services

- Swiftly adopted new skills during 3-month rotations.
- Managed high security systems.
- Communicated effectively with military professionals regarding IT systems.

Technical Skills

- Python
- Java
- Evolutionary Computation
- SQL
- R
- LaTeX
- Machine Learning
- Optimization
- Git
- Research
- Data Visualization
- Tensorflow
- Linux
- Reinforcement Learning
- AI
- PyTorch

Key Attributes

- Experienced Industrial Collaborator
- Advocate for Equality
- Confident Speaker
- Logical & Analytical Problem Solver
- Intellectually Curious
- Participative Leader
- Efficient Time Management
- Excellent Presenter
- Communication-Focused Team Member

Extra Curricular

ATHENA SWAN - board member and advocate for equality, 2017-2019.

AVID READER: Average 3 books per week.

CHARITY WORK: Animal welfare volunteer.

COSMOS - founder of the skill sharing initiative at MSU & UoS.

GITHUB: Personal projects.

PAPER REVIEWING - IJCAI-PRICAI 2021, GI@GECCO19

PODCAST: host and founder with 1000+ hours recorded of audio and video, 150k+ downloads.

PHOTOGRAPHY: Competition host (1, 2, 3) with 161M+ votes. Chrome themes (1, 2, 3)

WEBSITE: I compile my various hobbies into one place.

References

Industrial and academic referee details available on request.

Publications

Li, S. S., Peeler, H., Sloss, A. N., **Reid, K. N.**, & Banzhaf, W. (2022). Genetic Improvement in the Shackleton Framework for Optimizing LLVM Pass Sequences. arxiv (2022) (preprint).

Peeler, H., Li, S.S., Sloss, A., **Reid, K.N.**, Yuan Y., Banzhaf, W. Optimizing LLVM Pass Sequences with Shackleton: A Linear Genetic Programming Framework. arxiv (2022) (preprint).

Reid, K.N., Miralavy, I., Kelly, S., Banzhaf, W., Gondro, C. 2021, July. *The Factory Must Grow: Automation in Factorio*. GECCO'21: The Genetic and Evolutionary Computation Conference Companion 2021. ACM, 201

Reid, K.N., Miralavy, I., Kelly, S., Banzhaf, W., Gondro, C. The Factory Must Grow: Automation in Factorio. arxiv (2021) (preprint).

Han, J., Gondro, C., **Reid, K.N.**, Steibel, J.P. Heuristic hyperparameter optimization of deep learning models for genomic prediction. G3 Genes | Genomes | Genetics (2021).

Reid, K.N., 2019, September. *Metaheuristics for Solving Real World Employee Rostering and Shift Scheduling Problems*. Thesis.

Reid, K.N., Li, J., Brownlee, A., Veerapen, N., Swan, J., Kern, M. and Owusu, G. 2019, July. *A Hybrid Metaheuristic Approach to a Real World Employee Scheduling Problem*. GECCO'19: The Genetic and Evolutionary Computation Conference 2019. ACM, 201

Reid, K.N., Li, J., Veerapen, N., Swan, J., McCormick, A., Kern, M. and Owusu, G. 2018, September. *Shift Scheduling and Employee Rostering: An Evolutionary Ruin & Recreate Solution*. In Computer Science and Electronic Engineering (CEEC), 2018. IEEE.

Reid, K.N., Li, J., Swan, J., McCormick, A. and Owusu, G., 2016, December. *Variable Neighbourhood Search: A case study for a highly-constrained workforce scheduling problem*. In Computational Intelligence (SSCI), 2016 IEEE Symposium Series on (pp. 1-6). IEEE.