Hayden McAlister

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**Phone**
022 120 8324

**Github**
https://github.com/
hmcalister

# Hayden McAlister
## Software Engineer

**About Me** I am a Masters student of Computer Science at the University of Otago. My research has focused on artificial intelligence, neural networks, and high dimensional dynamic systems.

I enjoy investigating new ideas, trying new technologies, and solving problems both mathematical and engineering in nature. I have a strong background in computer science, as well as mathematics and physics, which has helped me develop problem solving skills.

## Education

**2023, University of Otago**
MSc. Computer Science

**2022, University of Otago**
BSc(Hons), 1st Degree. Computer Science

**2019 - 2021, University of Otago**
BSc. Major in Computer Science, Minors in Physics, Mathematics

## Research Projects

**2022-2023, *Interpretability of Neural Networks,* University of Otago**
Research project in interpretability of convolutional neural networks.
Gained a lot of experience with very low level Tensorflow and other machine learning libraries. Worked independently to achieve project goals.

**2023, *Handwriting Analysis Project,* University of Otago**
Group research project in handwriting analysis. Attempted to classify handwriting quality using a variety of metrics.
Gained experience with data cleaning, signal processing, data visualization, and model comparisons.

**2022, *Natural Language Processing Project,* University of Otago**
Group research project in natural language processing. Goal was to create methods of measuring similarities between documents with respect to different metrics.
Gained experience with data cleaning, data processing, natural language processing, and natural language tools.

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# Experience

**2021-2023, *Lab Demonstrating (Various Papers),* University of Otago**
Involved presenting computer science topics to students. With more experience also involved creating and refining teaching resources for labs. Detailed achievements:
- Demonstrated for the papers:
    - COSC201: Algorithms and Data Structures
    - COSC202: Software Development
    - COSC203: Web, Databases, and Networks
    - COSC204: Computer Systems and Security
    - COSC301: Network Management and Security
    - COSC343: Artificial Intelligence
- Gained experience working with a team
- Gained experience explaining difficult concepts to the point of deep understanding

**2020-2023, *Tutoring,* Freelance**
Freelance tutoring for various subjects about the university. Specifically tutored in the fields of Computer Science, Mathematics, and Physics.

**2020 - 2022, *IT + Web Design,* STMSNZ**
Detailed achievements:
- Designed and created custom websites
- Aided with many mundane IT tasks, e.g.:
    - Email clients
    - Software bugs
    - Fixing user errors

# Software Development Skills

**Programming**
- Python
- Java
- Shell
- Go
- C/C++
- JS + Frameworks
- Rust
- Matlab

**Machine Learning + Data Science**
- Tensorflow
- Dash
- Pandas
- Pytorch
- NumPy
- Polars
- SpaCy
- SciPy
- SQL

**Databases**
- MySQL
- Cassandra
- SQLite
- Monarch
- MongoDB
- GraphQL

**Other Technologies**
- Git/GitHub
- gRPC
- Terraform
- AWS/Cloud
- Docker
- Bash/Shell
- Kubernetes

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# Awards

**2023, *Master's Research Scholarship*, University of Otago**
Awarded to students with high academic achievement moving into Masters research.

**2021, *Sir George Grey Senior Scholarship*, University of Otago**
Awarded to the top Bachelors student in the Division of Science.

**2021, 2022, *Summer Research Scholarship*, University of Otago**
Awarded to students who undertake a research project over summer.

**2020, *Robert Jack Physics Prize (200 Level)*, University of Otago**
Awarded to the top student in 200-level physics.

**2019, *Academic Excellence Entrance Scholarship*, University of Otago**
Awarded to the students with high academic achievement entering the University of Otago.

**2019, *Gordon Jupp Memorial Prize in Physics*, University of Otago**
Awarded to the top student in 100-level physics.

**2019, *Dux Scholarship*, Otago Boys High School**
Awarded to the Dux of Otago Boys High School to study at university.

# Interests

**Professional**
Machine Learning, Neural Networks, Data Science, Data Visualization, Software Engineering, Software Development, Software Scalability

**Personal**
Mathematics, Physics, History, Guitar, Dungeons and Dragons, Magic: The Gathering