THOMAS NOBES

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TERTIARY EDUCATION

PhD in Computer Science (Monash University) *2021-2025*
Voxel-Based Pathfinding (3D): Algorithms and Applications

Bachelor of Science Advanced - Research (Honours) *2017 - 2020*
Monash University: Honours in Computational Science (WAM: 85 - First Class Honours)
Majored in Physics, Computational Science. Minor in Mathematics (WAM: 75)

RESEARCH EXPERIENCE

Pipe-Routing and Industrial Plant Layout Design (3D Pathfinding) *2021 - 2025*
(PhD Project) Automatic methods for efficient pipe-routing. Development of 3D search algorithms with complex engineering constraints. Collaboration with Woodside Energy Ltd.

Coupling Social Dynamics and Epidemiology to Model Adaptive Behaviour *2020*
(Honours Project) Coupling evolutionary social norms and game theory in epidemiological models.

Modelling Solar Power Production and Storage *2019-2020*
(Winter Scholarship) Modelling modern solar and household demand data in Australian cities.

Applying Convolutional Neural Networks to Survey Seal Colonies *2019*
(3^{rd} year project) Training CNNs to count Australian seal populations from aerial drone imagery.

PUBLICATIONS - FIRST AUTHOR

The Jump Point Search Pathfinding System in 3D *2022*
The 15th International Symposium on Combinatorial Search (SoCS), Vienna, Austria.

Voxel Benchmarks for 3D Pathfinding: Sandstone, Descent, and Industrial Plants *2023*
The 16th International Symposium on Combinatorial Search (SoCS), Prague, Czech Republic.

PROGRAMMING SKILLS & TECHNICAL STRENGTHS

Python & C++	Extensive experience across various domains such as machine learning, modelling and simulation, advanced data structures and algorithms.
Unix Shell	Comfortable with data management, script execution, and remote servers.
Git	Experience using Git for version control.

Mathematics	Multi-variable calculus, linear algebra, differential equations.
Physics	Strong Experience modelling physical phenomena and problem solving.
Computer Science	Strong experience with advanced algorithms and data-structures, modelling and simulation, data science and AI techniques, pathfinding.

TEACHING EXPERIENCE

Admin Teaching Assistant (Monash University) *2022-Present*
FIT5222: Planning and automatic reasoning (Master's level unit)
Experience developing curriculum content and communication of high-level topics.

Teaching Assistant (Monash University) *2020-Present*
FIT1045: Introduction to computer science (first year unit)
Distilling complex topics clearly for students from a wide variety of experience & backgrounds.

Private Tutoring *2017 - 2020*
One-to-one tutoring for high school mathematics and physics.

REFEREES

Dr. Daniel Harabor (Associate Professor)
Daniel.Harabor@Monash.edu

Dr. John Betts (Senior Lecturer)
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