

## HENRY ROUTSON

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High performing Computing major at The University of Melbourne, with extensive and multifaceted experience in Git, SQL, Data Structures, Algorithms, Optimization and Linux.  
Eager to learn in a fast-paced environment.

### EDUCATION

#### The University of Melbourne

Jun 2021 – Dec 2024

Bachelor of Science, Major in Computing and Software Systems

#### Ballarat Grammar

Sep 2020

- Academic scholarship
- VCE: Software Development, Specialist and Methods Mathematics, Chemistry and Physics

### EXPERIENCE

#### Aerospace and Rocket Engineering Society ([ARES](#)), The University of Melbourne

Flight Simulations Team Member

Jan 2023 – Present

- Supports creating rocket trajectory simulations to inform rocket ballast and airbrake deployment configuration in competition to get as close to 30,000 feet as possible.

Operations Team Member (3D rendering – see next page)

Jan 2023 – Present

Python Developer

Jul 2023 – Present

- Automates trajectory optimization for rocket simulations to improve efficiency, reliability, and accuracy

React and TypeScript / JavaScript Developer

Jan – Jul 2023

- Collaborated with industry software developers and Master of Computing students in React 3JS Fibre
- Implemented fins with a dynamic count into a 3JS 3D render

#### Open-source contribution

##### [Cached File Explorer - in rust](#)

- Isolated poisoned thread issue to minimal reproducible steps, and created a pull request bug fix which was merged into the project

##### [Supabase Auth UI](#)

- Allowed additional UI configuration options and added documentation to one of the most popular flutter packages.

#### Queen's College IT Support, The University of Melbourne

2022

- Supported 350 students and staff across various technical issues

### SELF-DIRECTED PROJECTS

**Mutual social app – in React native, transferred to Flutter**    <https://github.com/HenryRoutson/Mutual>  
2024

*Firebase Fire store, database integration, user authentication, Expo, Typescript, cloud functions*

#### Leetcode Competitive Programming

2021 – Present

<https://leetcode.com/HenryRoutson/>

- Solved 113 practice programming problems in numerous languages including Python, C and Rust
- Posted solutions have over 1.5 thousand views

#### CHelp - in C

2023

<https://github.com/HenryRoutson/CHelp>

- Utilised meta-programming to track dynamic memory in C and improved debugging and bug detection abilities for C programmers

- Developed cross platform program that displays data and location of un-freed allocations on program completion, and allows checks for the number of different types of allocations

### AutoHeader - in Rust

2022

<https://github.com/HenryRoutson/autoheader>

- Implemented “Public” keyword into C programming language to automate the creation of header files
- Uses automated testing and regular expression.

### Light Wakeup - in Swift

2021

<https://github.com/HenryRoutson/Light-Wakeup/tree/main>

- Completed a dark and light swift UI and interfaced this with IOS notifications

### Soil Nutrient Calculator - in Python (VCE Software development)

2019

- See video [here](#).
- Architected GUI Software for a multi-million dollar business which performs Vector calculus to find the ideal compost for any soil and crop combination
- This remains in use, quantifying the product value to customers and continuing to improve their crop yield and quality

## ACADEMIC PROJECTS AND PERFORMANCE

### The University of Melbourne Subjects

#### IT Project (JavaScript / TypeScript, React, HTML, CSS)

- Our project utilises React to build on quicksort algorithm visualization software
- Improved code standards and redesigned stack visualization to improve students ability to understand the quicksort algorithm.
- Please see [video](#)

#### Models of Computation (Haskell)

- My Haskell code was chosen as the solution for numerous practice problems within a cohort of 600

#### Computer Systems (C)

- Developed functional memory allocator for operating systems and a multi-threaded web server

#### Algorithms and Data Structures (C)

- Implemented a Quadtree, Linked list, Dijkstra and A\*

#### Foundations of Computing (Python)

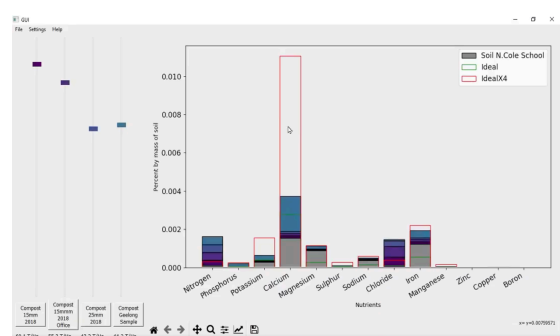
- Achieved overall 98%, one of the highest marks in the cohort

## WORK SAMPLES

Cinematic 3D visualisation of 2023 ARES Spaceport competition rocket in Blender



VCE software development final project in Python using a PyQt5 GUI and Matplotlib



## ENGAGEMENT

- UniMelb Competitive Programming Club – Participant

2022

**References available upon request**