**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**](https://eng.unimelb.edu.au/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](https://github.com/conaticus/FileExplorer/commit/af927569de51a494ef7a85b62fb588fd10f751b6)  July 2023

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

**Queen’s College IT Support**, **The University of Melbourne** 2022

* Supported350 students and staff across various technical issues

**SELF-DIRECTED PROJECTS**

***Mutual – in React native***  *In development https://github.com/HenryRoutson/Mutual* 2024

*Firebase Firestore database integration, user authentication, Expo, Typescript*

**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](https://www.linkedin.com/posts/henryroutson_from-scratch-desktop-software-activity-6791226838111789056-5Gdt/).
* 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](https://algorithms-in-action.github.io/) (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](https://www.linkedin.com/feed/update/urn:li:activity:7131593456203792384/)

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 |
| TopOnRocket4_edited2_colorGrade.png | Screenshot 2023-02-06 at 3.49.47 pm.png |

**ENGAGEMENT**

* UniMelb Competitive Programming Club – Participant 2022

**References available upon request**