William Snell

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github.com/williamsnell

Experience

Thermofluids Analyst, Rocket Lab – Auckland, NZ July 2021 – May 2024

- Helped develop Hyper Curie – a novel rocket engine, and the cornerstone of a successful lunar mission. Used data analysis, bespoke numerical models, fluid dynamics, and thermodynamics to find solutions and overcome several major technical blockers during engine development and qualification. Additionally, supported flight ops.
- Developed Fig, a configuration management service and front-end that dramatically simplified access to key vehicle parameters for the Neutron rocket.
- Led the development of the Reaction Control System(s) for Neutron, from clean sheet design through to initial testing. This involved building and applying numerical models in python, project management, procurement, systems engineering, test design, and data analysis.
- Key analyst for Neutron's propellant systems. Used custom python models and novel CFD approaches to lead trade studies and investigations. Responsible for the vehicle side of the engine-propellant interface.
- Led the creation, development, and maintenance of *Thermofluids*, a rigorously tested python library, that forms the bedrock of the Thermofluids-Analysis team's modeling efforts. Adoption of this library dramatically reduced modeling errors, and increased inter-team trust in (and consequently buy-in of) modelling results.
- General Problem Solving – Took pride in having an outsized impact on the broader company's success by enabling and empowering colleagues across teams and projects. Always keen to help, whether providing subject matter expertise for a pressing, high-stakes problem, or simply helping a colleague up-skill in a new tool.
- Awarded "Rookie of the Year" for 2021.

Analysis Intern, Rocket Lab – Auckland, NZ Jan 2020 - June 2020

- Developed a propellant tank/pressurization system model in python.
- Improved prediction of pressurant requirements, enabling improvements to the Electron rocket.

Projects

Mech. Interp. and A.I. articles on willsnell.com github.../ws_content

- Created several articles to explore topics touched on in ARENA content in greater depth. Some are more technical, while others (*interactive articles*) are designed to be fun and interactive.
- Mechanistic Interpretability articles: Trigrams, Why Is Measuring Composition So Difficult?, Why does my GAN do that?
- Interactive articles: Navigating Hyperspace, Entropy and Information Theory.
- Tools Used: JavaScript, Plotly, Hugo.

playhexchess.com github.../hexchess

- Developed a hexagonal chess game with online multiplayer, an engine to play against for single player (using simple heuristics and AB-pruning), persistent sessions, and responsive design.
- Tools Used: Rust, Svelte.

Crafting Interpreters 2024

- Worked through Crafting Interpreters, building a C-based parser and bytecode interpreter for a toy language.

Education

University of Queensland, BEng/MEng in Mechanical and Aerospace Feb 2016 – Nov 2020

- Honours Class I. GPA: 6.78/7.0
- Hawken Scholar, 2016 – 2020 (Top 5% or 25 students in the Faculty of Engineering)
- **Coursework:** Numerical Methods, Fluid Dynamics, Thermodynamics, Control Theory