Holm

Contents

[About Me 1](#_Toc156223723)

[Writings 1](#_Toc156223724)

[Projects 1](#_Toc156223725)

[Vadum 1](#_Toc156223726)

[Torrentem 1](#_Toc156223727)

[Ositum 1](#_Toc156223728)

[Aestuarium 1](#_Toc156223729)

# About Me

I am eagerly preparing to embark on my PhD journey in computational mechanics, specifically fluid-structure interaction within the Civil and Environmental Engineering department at the University of Illinois at Urbana-Champaign, commencing in August 2024. Originally from Melbourne, Australia, I completed both my bachelor's and master’s in environmental engineering at The University of Melbourne.

On this website you will find the numerous pursuits that take up my time. From the work I am undertaking during my PhD, my personal passion projects, as well as my writings on a wide range of topics that interest me.

Widescreen: [] [] [] []

Half Screen: [] []

Mobile: []

I am mostly interested in high fidelity and large-scale environmental modelling. My primary coding language is C++, utilizing the numerical library PetSC, developed up the road from Illinois at Argonne National Laboratory. However, most of my remote sensing visualization is done in Python.

Beyond my professional interests, I have a deep appreciation for geography and history, literature, and languages. Reading fuels all my curiosity and imagination, and I have shared a selection of my favorite books here. Additionally, I am proficient in Chinese, which I learnt by myself, for those comfortable in the language, feel free to explore this website in Chinese by clicking the toggle button in the navigation pane.

This all cumulates into *environmental storytelling*, which I have formulated as an engaging, scientific way of showcasing the environment and its relationship to humanity.

Non-scholarly interests include that of bushwalking and Australian football, the native sport of my country.

If you have any enquiries or thoughts, I would be delighted to engage with you, feel free contact me through any means given in the navigation pane.

# Projects

## Torrentem

*Torrentem is a parallel CPU/GPU multi-physics solver library developed in C++ to be the key driver in my PhD research. Developed to be used in a powerful and flexible way, it implements advanced numerical techniques such as RBVMS and stabilised formulations, a level-set method, custom GPU based linear solvers, and a mesh paritioning and MPI communcation model for Parallel CPU on multi-node HPCs. Currently closed source.*

## Vat Photopolymerization Testbed

*Using my Torretem library, this project is a testbed for testing numerical modelling of vat based photopolymerization. Vat photopolyermization is a type of additive manufactuing, that involves the curing of a liquid polymer into a desired solid structure.*

## Numerical Wave Tank

*Using my Torrentem library, this project is a testbed for a numerical wave tank. Key in investigating new phenomena in oceanography/surface hydrodynamic engineering.*