

Athena (Xiaohe) LIU

🐙 github.com/XiaoheLiu

in [linkedin.com/in/athenaliuxh](https://www.linkedin.com/in/athenaliuxh)

🏠 athenaliu.space/

✉ sdathenaliu@gmail.com

☎ (+1) 778-554-2230

EDUCATION

- **University of British Columbia** Vancouver, BC
Ph.D. in Mechanical Engineering - Computational Fluid Mechanics Sept 2017 - Present
- **Brown University** Providence, RI, U.S.A.
Ma.Sc. in Engineering Sept 2015 - May 2017
 - **Courses:** Numerical Solution of Partial Differential Equations, Scientific Programming in C++
- **Fudan University** Shanghai, China
Ba.Sc. in Theoretical and Applied Mechanics Sept 2011 - July 2015

PROGRAMMING SKILLS

- **Programming Languages:** Python, C++, JavaScript, GraphQL, SQL, HTML, CSS
- **Frameworks:** ReactJS, GatsbyJS, NextJS, Apollo-client, Redux, Jest, Enzyme, NodeJS, Django
- **Databases:** PostgreSQL, MySQL, MongoDB
- **Others:** Git, MATLAB, Bash, L^AT_EX

TECHNICAL PROJECTS

- **SwordRama - Sword Recommender & Reviews** April 2019
Django & Machine Learning Project
 - Built a review platform and a recommendation system to share information and get insights on HEMA (Historical European Martial Arts) training swords.
 - Created a sword database based on web resources, and developed filtering and searching functionalities for swords in the web app.
 - Provided customized recommendations for users using K-means clustering as a machine learning algorithm with Pandas, SciPy, Numpy and Scikit-learn.
 - Deployed to production on Heroku (swordrama.herokuapp.com).
- **Handcrafty - Sell & Shop for Handmade Items** Feb - Apr 2019
React & GraphQL Project
 - Built a full-stack Etsy-like web app where user can search, sell, edit, add to cart and buy their favorite handmade products.
 - Created a server side rendered frontend with NextJS, and used Apollo-client for fetching/caching data from the GraphQL backend and local state management; Tested the major components using Jest and Enzyme.
 - Designed extensive relational data models including users, items, orders, shopping cart items, and order items; Implemented the data layer on the backend using GraphQL Yoga and Prisma.
 - Developed server side functionalities including JWT authentication, permissions, email password updates, uploading images, and charging credit cards with StripeJS.

- **百字本 (100-Letter) Baizi Journal App**
React & Node Project *Jan - Feb 2019*
 - Designed and developed a minimalist journal app which prompts user to write a journal with 100 Chinese characters exact every day.
 - Reached out to a senior developer and collaborated on backend development, built a REST API with NodeJS, ExpressJS and MongoDB.
 - Independently developed the frontend with React and Redux, implemented routing using React Router, and integrated with the backend using Axios and Redux Thunk.
- **Computational Modeling of High Speed Jet Impingement**
Research Project *June - Oct 2018*
 - Developed numerical procedures in C using an open source software named *Basilisk*, to simulate high speed liquid jet impingement on a moving surface, providing physical insight to the phenomena that was not observable through experiments.
 - Used supercomputing and MPI parallel algorithm to accelerate the computation, reducing the runtime by 99%.

WORK EXPERIENCE

- **Lead Teaching Assistant (Statistics & Machine Learning)** Vancouver, BC
Department of Mechanical Engineering, UBC *Jan 2018 - Present*
 - Create and teach tutorials for 3rd year undergraduate students on statistics and machine learning. Tutorials include hands-on data analysis with MATLAB and python, and white board explanation on mathematical concepts and textbook problems.
 - Coordinate with 2 professors and 7 other TAs throughout the term to ensure that the tutorial materials are complementary to the rest of the course. Deliver 6 hours of lectures to a class of 20-50 people every other week for 10 weeks.
 - First taught this tutorial in 2018 and was invited to teach again as lead TA in 2019 thanks to the good feedbacks from the students and instructors.
- **Administrative Intern** Shanghai, China
InnoSpace Startup Incubator *March - June 2015*
 - Coordinated among 20+ onsite web-oriented startup teams, the administrative staff and external investors, to ensure projects stayed on schedule and stakeholders were informed of project status.
 - Provided administrative support including front-desk reception, schedule management, event planning and social media marketing.

OTHER SKILLS & INTERESTS

- **Languages** : English (Fluent), Mandarin (Native), French (Conversational), Japanese (Basic)
- **Interests**: Historical Rapier Fencing, Origami, Stamp Carving