# **Arsh Upadhyaya**

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**EDUCATION**

**University of Queensland** **Brisbane, Australia**

*Bachelor of Engineering (Hons.) in Software Engineering Sept ‘20 - Jul ‘25*

**Relevant Courses** – Multiple Programming Language Courses | Cloud Computing |Software Architecture | Artificial Intelligence | Machine Learning | Functional Programming | Database Management Systems

**WORK EXPERIENCE**

**Blackfoot Capital Ltd Remote**

*ML Engineering Intern Dec ‘23 - Mar ‘24*

* Leveraged yfinance, **Interactive Broker API**, pandas and Matplotlib to extract, process, and visualize historical market data for S&P 500 stocks.
* Developed a comprehensive back testing library to evaluate trading strategies across major US stocks and indices, **optimizing hyperparameters** on existing trading strategy to increase profit.
* Created **database** of historical data and **SQL queries** and **visualisation** to find most promising stocks
* Deployed tuned strategy on select stocks to give a return of **2.8 %** over **100** trades on short time frame.
* Created **GUI** with endpoints connecting to created database, visualising different trading strategies performance report on varying stocks on a fast-updating **responsive webpage** built using **React.js**.

**PROJECTS**

**Escape Earth Game** Jul ‘23 - Nov ‘23

*Group Project*

* 50 students in teams of 6 worked on a large game collaborating on GitHub, in sprints across 10 weeks.
* Designed animations and curated assets to enhance game visuals and ensure consistency.
* Maintained the team’s feature branch, resolving 20+ **non-trivial merge conflicts** through collaboration with team members and other teams over the course of the project.
* Developed meaningful **Junit tests** on core functionality and fixed **code smells** using SonarQube to create good coverage along with an automated workflow in GitHub.
* **Debugged** and **refactored** code to comply with design patterns as decided by project design team.
* Supervised **UML**, **sequence diagrams, wiki** creation, ensuring readability of work done by team.

**Research Thesis** Jul ‘23 - Jun ‘24

*Individual Project*

Poster Link: https://github.com/arshupadhyaya/Thesis\_Poster/blob/main/Thesis\_Poster.pdf

* Trained U-Net models using **PyTorch** on synthetic (1M+ images) and medical datasets (900 images).
* Optimized training pipeline with **SGD**, **batch normalization**, and **ReLU** to address divergence issues
* Analyzed effects of initialization, augmentation, and scale invariance on loss landscape
* Visualised loss trends and model behaviour using **Matplotlib** and seaborn.

**Programming Languages:**

* Proficient - C/C++, Python, Java, HTML/CSS, SQL, Haskell, MATLAB, LaTeX
* Familiar - JavaScript, R

**Development Tools/Frameworks:**

* Proficient - AWS, Docker, Kubernetes, GitHub, Postman, PyTorch, NumPy, Hadoop, Junit, SonarQube
* Familiar – React, Angular, GCP, Terraform, MongoDB, Flask, FastAPI