# **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*

* Developed and backtested robust trading strategies for S&P 500 stocks using Python libraries (yfinance, Interactive Brokers API, pandas, matplotlib) and a custom backtesting framework.
* Optimized trading strategies by **tuning hyperparameters** and evaluating performance across major US stocks and indices.
* Constructed a historical data repository with **SQL queries and visualizations** for identifying high-potential investment opportunities.
* Deployed a tuned strategy on select stocks, achieving a **2.8%** return over **100** high-frequency trades (HFTs).
* Built a **user-friendly GUI** with **React.js**, connecting to a database and dynamically visualizing real-time performance reports for various trading strategies across different stocks.

**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 throughout 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 the project design team.
* Supervised **UML** and **sequence diagram** creation, ensuring the readability of work done by the team.

**Research Thesis** Jul ‘23 - Jun ‘24

*Individual Project* ([Link to Project](https://github.com/arshupadhyaya/Thesis))

* 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.

**SKILLS**

**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