Patrick Zhiji Yu

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SUMMARY

Final-year Master of Computer Science student with a passion for developing impactful technology solutions. Experienced in designing scalable web applications and leveraging data structures and algorithms to solve complex challenges. Currently developing a mobile app under the UOW EIS Summer Scholarship Program, utilizing geotechnical data, predictive algorithms, and a user-friendly interface to predict soil swell potential in real-time.

Education

Master of Computer Science — Australia

University of Wollongong — *July 2023 – July 2025(Expected)*

- Current GPA: 6.8/7.0
- Achieved High Distinction (HD) in 10 out of 12 subjects
- Big Data Management (97/100), Web Development (94/100)

Bachelor of Civil Engineering — China

University of Chongqing (QS World Rank 561)

- GPA: 3.57/4.00
- National Inspirational Scholarship, Outstanding Student of Chongqing University Top5%

Involvement

UOW Resident Ambassador — 2025

Organized events and activities to foster an inclusive, engaging, and supportive residential community - Bangalay

UOW EIS Student Mentor — 2024

Guided and supported EIS students in navigating the UOW environment, helping them connect with resources, develop social networks, and enhance their overall academic experience.

Stephen FitzGerald Scholarship Program — Oct 2024

Hosted by Australian National University and National Foundation for Australia-China Relations

Study Australia Industry Experience Program — Nov 2023

Hosted by Australian Trade and Investment Commission

Kitchen hand — Feb 2024 - Aug 2024

Illawarra Steelers Club Wollongong

Project Experience

Soil Swell Potential Prediction | *Cross-platform Mobile App* — Nov 2024 – Present

- Designed and developed a cross-platform mobile application to predict the swelling potential of expansive soils, accelerating initial decision-making by reducing reliance on time-consuming lab tests
- Built an intuitive user interface using **React Native** and **Expo**, incorporating AsyncStorage, FileSystem, and Sharing for efficient data storage and management
- Integrated and deployed optimized machine learning models (**ONNX**) using onnxruntime-react-native, enabling real-time, offline predictions directly on mobile devices
- Awarded a $6,000 scholarship through the **UOW EIS Summer Scholarship Program** in recognition of contributions to this innovative project

BadgerChat | *Web-Based Chat Application(Frontend Project)* — Dec 2024

- Developed BadgerChat, a **React-based** chat application enabling real-time communication in various chatrooms, utilizing **React Router** for dynamic navigation and **React Bootstrap** for a responsive UI
- Implemented user authentication with registration, login, logout, and session persistence using **context API** and **sessionStorage**, ensuring seamless user experiences
- Built message posting, pagination, and deletion features with fetch API, enforcing role-based access control and efficient state management using **React Hooks** (useState, useEffect, useContext)

- Ensured form validation and accessibility by integrating **regular expressions**, **semantic HTML**, and labeled form controls, improving security and user experience

EasyParking Management Portal | *Full-stack web application* July 2024 – Oct 2024

- Developed a full-stack web application for parking lot operators to manage parking spaces, allowing users to register, log in, check in/out parking spots, and automatically calculate fees
- Implemented administrator features enabling managers to add/remove parking lots and spaces, insert/edit parking locations, search parking spots, and view user data
- Created backend services as **RESTful** APIs using **Python**, **FastAPI** and **Postman**
- Designed a user-friendly interface using **HTML5**, **CSS**, **JavaScript** and **Jquery**
- Utilized **Docker** to containerize **MySQL**, leveraging **SQLAlchemy**'s ORM capabilities for data operations such as create, read, update, and delete

Scheme Interpreter for CS 61A | *Backend mechanics of an interpreter* Dec 2023 – Jan 2024

- Developed an interpreter for the Scheme language in **Python**, capable of evaluating a subset of Scheme expressions, including numbers, booleans, symbols, lambda functions, and conditionals
- Created a REPL (Read-Eval-Print Loop) for Scheme expressions, providing an interactive user experience akin to other programming language interpreters

Ants Vs. SomeBees Game for CS 61A | *Backend mechanics of a game* Nov 2023 – Dec 2023

- Implemented core game mechanics, including ant placement, bee movements, and their interactions, using functional and **object-oriented programming** paradigms in **Python**

Technical knowledge and Skills

Data Structures: Linked Lists and Adjacency Lists, Stacks and Queues, KMP, Trie, Disjoint Set, Heap, Hash Table

Algorithms: Quick Sort, Merge Sort, Binary Search, Two Pointers, Discretization, Interval Merging, DFS and BFS, Topological Sort for Directed Graphs, Minimum Spanning Tree

Big Data Tools: Hadoop, HIVE, HBase, Pig, Spark

Developer Tools: Git, Docker, Visual Studio, PyCharm

Libraries and Frameworks: SQLAlchemy, FastAPI

Professional Experience

Project Cost Engineer/Manager Aug 2019 - Feb 2023

Vanke/Overseas Land Ltd. (Real Estate Company) *China*

* **Data Analysis and Problem Solving**: Collected and analyzed cost data from multiple projects, correlating findings with project execution and contract agreements to develop and implement cost optimization strategies, resulting in measurable financial efficiency
* **Leadership and Teamwork**: Led cost control initiatives for two residential apartment projects, providing process management consulting and supervising two teams comprising nine members to ensure effective execution

References

Jacqueline Adriaanse Student Experience & Communications Coordinator||*UOW*
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Aaron Pereira Coursework Tutor||*UOW*
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Jing Li Coursework Tutor||*UOW*
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