Ziyi Song

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Education

Rensselaer Polytechnic Institute (RPI), Troy, New York **May 2019**
B.S. Computer Science GPA: 3.59/4.0
B.S. Computer and Systems Engineering (Dual Degree)

Relevant coursework: Database Systems, Artificial Intelligence, Algorithms, Cognitive Computing, Electric Circuits, Embedded Control, Computer Components and Operations, Computer Architecture and Networks.

Experience

Software Research Engineer @ IBM's AI Horizons Network (AIHN) Cognitive Immersive Systems Lab (CISL) RPI
JavaScript, HTML, CSS, Unity, C#, Watson AI Services, Artificial Intelligence | 2017 – 2019

- Developed an immersive, conversational system on a 360-degree screen that allowed students who are learning Mandarin Chinese to practice with an **AI agent** in simulated scenarios such as a scavenger hunt, booking a table at a restaurant, or shopping at vendors on a Chinese street, which will be used in a summer course in 2019 at RPI.
- Developed a Web interface which can display users' body position and gestures from sensory information via motion sensing input devices (Kinect) and a **JavaScript** backend to communicate with **IBM Watson AI** services.
- Implemented a replacement for IBM Watson's Speech-To-Text engine, using China IBM's experimental engine, by programming a wrapper around the experimental engine allowing it to seamlessly translate sentences in Chinese with our immersive system.

Teaching Assistant: Embedded Control, RPI **2017- 2018**

- Helped students better understand course material, including but not limited to the use of microcontroller and the calibration of accelerometer, ultrasonic ranger and electrical compass during open shop hours.
- Managed operations of laboratory such as opening, closing, equipment storage and safety check for 4 semesters and supported around 100 students.

Projects

Real-time Social Streaming App | *JavaScript, HTML, CSS, Websocket, Socket.io*

- Designed a web app that allows multiple users to access a video website where they can watch the same video synchronously with pausing and playing functionalities.
- Programmed a chat window where users can have a conversation through text while watching the same video together in real-time.

Smart Room Lighting System, sponsored by Leviton | *PSoC Creator, Embedded C, Processing, Java, Electric Circuit*

- Designed a smart room lighting control system which automatically controls lighting based on room occupancy and activity using machine learning and data from infrared, ultrasonic, thermal, and radar sensors.
- The project is a proof of concept for an industry project sponsor (Leviton) of different uses of existing sensor technology to provide better performance for room occupancy detection.

Smart Parking System | *Arduino, Embedded C, Electric Circuit*

- Designed an Arduino-based smart parking system for a multi-level parking garage which provided drivers a visualized map for finding the closest available parking spot through both display boards and a smartphone application.

Skills

Languages, Frameworks, and Tools

- Advanced: Python, C/C++, JavaScript, Java, PostgreSQL, C#, Embedded C, Web development
- Familiar: MIPS Assembly, Haskell, Prolog, Scheme
- Topics & Tools: Back-End Development, API Development, Machine Learning, Artificial Intelligence, Latex, CAD, Adobe Photoshop, Watson AI Services, PSoC Creator, Arduino
- Speaking: Fluent in English and Mandarin

Publications and Posters

- **Publication** — "*Interaction Challenges in AI Equipped Environments Built to Teach Foreign Languages Through Dialogue and Task-Completion.*" In Proceedings of the 2018 on Designing Interactive Systems Conference 2018, pp. 597-609. ACM. (**PDF Link**)
- **Poster** — "*The Rensselaer Mandarin Project - A Cognitive and Immersive Language Learning Environment*" - Poster at AI Horizons Colloquium, Cambridge, MA. (**Web Link**)
- **Poster** — "*Teaching Mandarin as a Second Language through a Cognitive Immersive Classroom*" - Poster in 6th IBM Research Cognitive Colloquium, Yorktown Heights, NY. (**Web Link**)