

# Joel McCandless

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## WORK EXPERIENCE

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**XP Health** - Full Stack Web Engineering Intern Summer 2024

- Increased **operations counting speed by 6X** via **integrating barcode scanners** into daily workflow
- Awarded return offer and **highest intern rating** for cross-functional impact in Operations and Marketing
- Decreased **API response time by 100X** using `.prefetch_related` and `.annotate` in Django QuerySet API
- **Automated confirmation emails** and push notifications using Google Cloud API and customer.io
- Used frameworks including **React** and **Bootstrap** and tooling including **bitbucket**, **github** and **CI/CD**

**RPI Paid Researcher** - 2 Robot Leader-Follower Formation Control Spring 2024

- Implemented **follow the leader** and **obstacle avoidance** with differential equation **feedback loops**
- Applied **path planning** with **multiple constraints** using **potential fields** (multivariable calculus)
- Wrote Python code using ROSpy **transformations**, `rostopic`, `roscpp`, **publishers** and **subscribers**
- Combined **asynchronous** subscriber callback functions and **synchronous** feedback loops

## EDUCATION

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**Rensselaer Polytechnic Institute** - Computer Engineering & Computer Science Dual, Class of 2027

- **4.0 GPA**. Dean's Honor List. Extracurriculars: **RPI Men's Tennis**, **RPI Cybersecurity**, **RCOS**, **SAAC**

## PROJECTS

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**RPI Course Catalog Mapping** 2023-2025

- Provides an **interactive map** for students to **visualize course progressions** and plan classes
- Web scrapes **2000 courses** from the RPI catalog using Python's **requests** and **beautifulsoup4**
- Uses DOT Language and **Graphviz's** `twopi` layout engine to generate a **radial web graph**
- Merging with **RCOS** (Rensselaer Center for Open Source) to provide the graph for **schoolwide use**

**9x9 Big Tac Toe Artificial Intelligence (AI) Player** 2022-2023

- Uses a **threaded minimax algorithm** to examine **over 500,000 future outcomes** and **evaluate favorability** recursively based on placement of Xs and Os
- Implements a **breadth-first** approach by tracking upcoming calculations in **work queue**
- Tabulates calculations in a **decision tree** for easy access and **minimal computation times**

... [more projects](#)

## LEADERSHIP

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**Research Lead** - Cognitive Robotics for Education Spring 2024

- Coordinated **two professors** and **two students** to design a project framework and kit for students to pursue the **Cognitive Robotics Wumpus Challenge**, involving **mapping** and **deductive reasoning**
- Debounced **noisy sensor data** from hall effect sensors for encoders and infrared sensors

**Secretary** - RPISEC, RPI Cybersecurity 2024-present

- Lead team meetings, plan our calendar and compete in **offensive cybersecurity** CTF events

**Co-Captain and Hardware Lead** - 2 Bits and A Byte Robotics Team 2021-2023

- 2023 Inspire Award, 2022 MA Semifinalists (**robot reveal**), highest ranked MA public school team

**Co-Captain and Player #1** - Lexington High School Varsity Boys' Tennis Team Spring 2023

## AWARDS

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**Rensselaer Leadership Award** - “[A]n outstanding record of academic and personal achievements, a strong commitment to excellence, and illustration of intellectual curiosity”

**Laura Lasa Servant Leadership Award** - awarded to one Lexington HS student athlete “[B]eing the first to volunteer to help, never too proud to do the work even the difficult or unpopular jobs”