

Justin Fang

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EDUCATION

University of Waterloo

Candidate for Bachelor of Applied Science in Electrical Engineering

Waterloo, ON

Sep. 2025 – Present

SKILLS

Technical: Python, C++, n8n, Arduino, Soldering, 3D Printing

Developer Tools: GitHub, VS Code, PyCharm, Microsoft 365, Google Drive

EXPERIENCE

Automation and Backend Developer

Feb. 2026 – May 2026

Garde-Robe Inc

New York, NY

- Deployed and maintained an AWS EC2 instance running an n8n receipt parsing pipeline with Docling and LLMs, automating extraction of structured data from retailer emails and cutting costs by 90%.
- Authored LLM extraction prompts with strict JSON output and conditional logic, improving reliability by 50%.
- Designed normalized database schemas with entity relationships to support a future backend migration.
- Debugged errors in AWS CloudWatch logs, identifying token expiry and silent failures to restore email processing.

Analog Team Member

Current Project

UWASIC Design Team at University of Waterloo

Waterloo, ON

- Design single-stage operational amplifier in SkyWater 130nm PDK using XScem in Nix-managed environment.
- Completed analog IC design flow from schematic to DRC/LVS-verified physical layout using Magic VLSI.
- Performed circuit verification including DC operating point analysis, AC frequency response and testbenches.

Vice President of Operations

Nov. 2022 – July 2025

Youth STEMming Change

Edmonton, AB

- Coordinated Edmonton Science Bowl, increasing youth participation and raising over \$1,300 for initiatives.
- Enhanced the engineering skills of 3000+ youths by designing workshops with bridges, rocketry, and forensics.
- Optimized executive operations, ensuring seamless event execution with City of Edmonton Youth Council.

Vice President of External Events

May 2023 – June 2025

Old Scona Academic High School – Chinese Cultural Club

Edmonton, AB

- Organized cultural events like Spring Gala and Multicultural Potluck through fundraising Bubble Tea runs.
- Expanded club participation by 100% through spearheading outreach, doubling participants to over 110.
- Directed budgeting and logistics for over 10 events, establishing smooth production and sustained satisfaction.

PROJECTS

Autonomous Differential-Drive Robot Navigation | C++, ROS 2, Docker, Foxglove

May 2026

- Built lidar-to-occupancy-grid costmap in C++, converting polar range and angle into (x, y) grid coordinates.
- Inflated obstacles with a linear cost falloff across a 2m radius, generating safety zones for path planning.
- Iterated every lidar beam using the scan's angle minimum and increment, dynamically sizing the grid.

Omni-Directional (Mecanum) Claw Robot | C++, ESP32, Arduino IDE, SolidWorks, GitHub

Nov. 2025

- Calibrated and coded 3 motors for custom 3D wheels, led to 100% increase in movement with 2 wireless ESP32s.
- Created alongside 2 peers a cardboard frame and custom-wired electrical system with 6 motors in 1 breadboard.
- Programmed wireless controller movement, increased functionality by 100% with controllable 2DOF electric claw.

Hospital Induced Delirium Detection | C++, Python, Arduino

Oct. 2025

- Integrated sensor data, text-to-speech, speech-to-text, and custom 3D printed system to test patient performance.
- Proposed various solutions to HID by analyzing preset thresholds, data, and interviews with medical professionals.
- Created a cognitive survey and benchmark system using multiple sensors, reducing false positives by 30%.

Arcade Blackjack Game | Python, Pygame

Jun. 2024

- Programmed an interactive Blackjack game using OOP with modular classes for dealer, player, and cards.
- Crafted a UI with buttons and event-driven logic in Pygame for real-time betting and statistics tracking.
- Engineered probability algorithms to manage ace logic, dealer rules, and betting systems.