Mark Peng

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EDUCATION

University of Toronto — Toronto, Ontario, Canada
Honours Bachelors of Science in Computer Science, Minor in Mathematics and Statistics — *Sep. 2024 – May 2028*
- **Activities and Societies:** UTMIST AI Open Source Developer

TECHNICAL SKILLS

Languages: Bash, C, C++, HTML, CSS, Java, JavaScript, Python, Ruby, Sass, SQL, TypeScript
Frameworks: Arduino, Django, Express.js, Flask, Next.js, Node.js, React, React Native
Developer Tools: Android Studio, Docker, Git, GitHub, GitLab, VS Code, JIRA, Postman, Linux, Copilot, Cursor
Technologies & Concepts: AWS, CI/CD, Firebase, GraphQL, MongoDB, PostgreSQL, Redis, REST APIs, WebSockets, Agile, Microservices, OAuth, Selenium, Unit Testing, TDD, Ceedling, Pytest

EXPERIENCE

Full-stack Developer Intern — May 2025 – Aug. 2025
Pulsenics — *Toronto, Ontario, Canada*
- Developed embedded firmware in **C** and automated validation pipelines in **Python**, improving system reliability and accelerating development workflows.
- Minimized communication errors from **10% to 0.001%** by implementing a custom ACK protocol in **C** over **Ethernet**, and optimizing performance through **DMA** tuning and clock synchronization
- Achieved **100%** unit test coverage on legacy **C** firmware by refactoring hardware-bound logic into testable modules and building a test suite with **Ceedling** using mocks and stubs
- Reduced manual verification time by ≈**90%** and cut release cycle time by **30%** by building a full-stack Python QA pipeline for post-production firmware, automating Modbus tests, real-time logging, and data validation
- Improved QA report page load times by **10x** by optimizing data serialization and integrating lazy-loaded Plotly graphs into **Jinja2**-generated HTML reports

Software Developer Intern — Feb. 2025 – Apr. 2025
Abundant Science — *Toronto, Ontario, Canada*
- Used **React Native** and **Expo Router** to create a cross-platform **mobile app** to use **phone cameras** to detect and read lateral flow rapid test results to securely send to healthcare providers while following PHIPA regulations
- Engineered a proof-of-concept vision model with ≈**85% accuracy** leveraging **Tensorflow**, **OpenCV** and **Python** for on-device automated lateral flow test detection
- Achieved a <**3MB** bundle size and <**100ms** average inference latency for an on-device **classification model** by optimizing the **TensorflowLite** image pipeline and model quantization
- Streamlined mobile app deployment by integrating **GitHub** with **Expo Application Services**, automating **CI/CD** pipelines for seamless building, testing, and deployment across development and production environments

Front-end Developer — Jun. 2022 – Jul. 2024
Toronto Model United Nations — *Toronto, Ontario, Canada*
- Drove user engagement to achieve **2,000+** weekly visits, by designing a mobile-friendly responsive website for Toronto's **largest** Model United Nations conference
- Delivered **consistent** and **scalable** content to create over **30+** live pages, by building site using **HTML**, **CSS**, and **Jekyll** for static-site generation
- Used **YAML**-content driven site generation, streamlining content changes and reducing maintenance efforts

PROJECTS

ProportionAl | *Next.JS, React, MongoDB, Terraform, Gemini API* — January 2025
- An AI-powered study app created within 72 hours for UofTHacks12 which analyzes and provides studying insights
- Web-app built using **Next.JS**, **React**, and **MongoDB** as a backend database for storing user information
- Deployed using **Terraform** for IaaS through an **AWS EC2** deployment to host the study platform