Aaron Tan

aaronhktan.com   github.com/aaronhktan   linkedin.com/in/aaronhktan

+1 (613) 618-7628
hi@aaronhktan.com

Skills

Languages
C, C++, Python, JavaScript/Typescript, Go, Java, HTML/CSS

Tools
Git, GCC/GDB/LLDB, Bash/Zsh, Sublime, Visual Studio, PyCharm

Experience

North (formerly Thalmic Labs)   Sept-Dec 2018
Embedded Software Engineering Co-op

- Built features for **embedded Android environment** in cutting-edge smart glasses on the Qualcomm MSM8909w platform.
- **Resolved errant suspend failures** by opportunistically removing wakelocks for dead PIDs, realized by traversing the **Linux kernel wakeup source tree**, and communicating between OS power management services and kernel through **new sysfs paths**.
- Demonstrated **20% power consumption savings** by changing inactivity fadeout methods, prototyping a **Binder service intermediary** between display controller software and Android services, then substantiating claims through power measurement over GPIB.
- Enhanced Bluetooth pairing experience by **tweaking low-power inactive state timeout** and properly **handling iOS Bluetooth LE remote disconnection state**, decreasing pairing retry times upon failure by up to sixty seconds.

Fitbit   Jan-April 2018
Embedded Software Engineering Co-op

- Shipped features and bugfixes in the **embedded JavaScript engine** running on **millions** of Fitbit OS devices to over 44,000 third-party developers as member of the JerryScript team.
- **Designed, implemented, and documented wrist-detection sensor API** in the SDK, fulfilling common developer request.
- Expanded **snapshot pre-compilation to byte code** for certain JavaScript/TypeScript files, **decreasing app launch times by up to 50%**.
- Proactively added Cantonese typeface support to firmware with 300+ unique characters as part of company flex time.

Projects

Jyut Dictionary – Offline Cantonese Dictionary   github.com/aaronhktan/jyut-dict

- Desktop program written in C++ displaying combined lexicon of 135k+ words from open-source Chinese dictionaries CECICT and CC-CANTO, formatted as a **SQLite3 full-text-search database** with a Qt frontend.
- Implemented **real-time searching** with input in Simplified or Traditional Chinese, as well as the Cantonese Jyutping Romanization scheme, Mandarin Pinyin, or English text, then display of results in a **model/view framework**.
- Architected with object-oriented principles in mind, executed through **observer/observable** and **mediator design patterns** as well as defining abstract classes/interfaces and using inheritance to maximize code reuse and maintainability.

Quaver – Lyrics Finder   github.com/aaronhktan/lyric-grabber

- Cross-platform desktop program written in Python to find and save lyrics for music files, reading/writing metadata for dozens of file formats with the Mutagen library, scraping lyrics from six popular lyrics websites with **Requests and BeautifulSoup**, and a PyQt frontend.
- Leveraged **multithreading with ThreadPoolExecutor**, **concurrent.futures**, and **QThreads** to fetch lyrics for 50+ songs in <10 seconds.

Breathe   github.com/aaronhktan/exhale

Featured on the Pebble App Store with 5.5k+ downloads.
- A Pebble app written in C for guided breathing sessions, with visual and haptic feedback, scheduled reminders and achievements/streaks system, localized in four languages, all on a **resource-constrained environment with 64kB of RAM**.
- Built with **Bluetooth AppMessage and PebbleKit JS** for two-way communication between watch and phone, **Pebble Animation framework** for programmatically generated graphics, and **Clay settings framework**.

Education

University of Waterloo
Candidate for BASc in **Computer Engineering***, 2022*

- University of Waterloo President's Scholarship of Distinction
- Nortel Networks Undergraduate Scholarship
- 872 Kiwanis Kanata RCAC Squadron Post-Secondary Bursary

- Involved in the **Midnight Sun Solar Car** design team
  - Working on telemetry system, with backend server written in Go and front end using Typescript.
  - Currently responsible for chase car user interface.