

Sebastian Holzapfel

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EXPERIENCE

- **Hardware Engineer (full-time)** Feb. 2019 - Present
Waymo LLC (Formerly 'Google Self-Driving Car Project') Mountain View, USA
 - **Sensing:** Intersection of hardware and software development, focussed on our primary LiDAR technology. My work has spanned from contributing to embedded drivers used onboard, to developing calibration & test stations for our LiDAR manufacturing lines, to building performance-critical software infrastructure for fleet analytics.
- **Embedded Software Engineer (part-time)** Nov. 2015 - Dec. 2018
Data61 (CSIRO Australia) Sydney, Australia
 - **eChronos RTOS:** Key developer of the open-source eChronos Real-Time Operating System. Designed & implemented new features, platform ports, drivers and demos (see also: presentation in talks section).
 - **Hardware Design:** Designed & assembled custom high-density electronics for various research projects. One such design was a 4-layer quadcopter single-board-computer PCB, used in a successful DARPA demo in the US.
- **DSP Engineer (full-time, intern)** Dec. 2017 - Feb. 2018
Dolby Laboratories Sydney, Australia
 - **Distortion Tuning:** Developed & implemented new DSP algorithms to automatically optimize for minimal perceived audio distortion during the final stages of TV & Soundbar manufacture. (see also: patents below)
- **Casual Academic (TA, part-time)** Feb. 2016 - Nov. 2018
University of New South Wales Sydney, Australia
 - **COMP9242 Advanced Operating Systems (17s2 & 18s2):** Tutored 2 consult classes.
 - **COMP3231 Operating Systems (17s1):** Taught 2 classes of 25 students + marking & administration.
 - **COMP1917 Higher Computing 1 (16s1):** Taught 1 class of 25 students.

(extended list of work experience available on request)

EDUCATION

- **BE Electrical Engineering (Hons. Class I)** Feb. 2015 – Dec. 2018
University of New South Wales Sydney, Australia

TALKS

- **Sane Behaviour on Teeny Hardware** linux.conf.au - Sydney, Australia
Memory protection model in the eChronos RTOS. See youtu.be/HKsaG7U55Pk Feb. 2018

PUBLICATIONS & PATENTS

- **'User-Level Mixed Criticality Systems Scheduling on Multicore':** Honours Thesis (link), published 2018
- **'Automatic characterization of perceived transducer distortion':** (patent #US10805723B2), granted 2020
- **'Audio enhancement in response to compression feedback':** (patent #WO2019246449A1), published 2019
- **'Manual characterization of perceived transducer distortion':** (patent #US20190379973A1), published 2019

AWARDS

- **Google Kudos (whilst @ Waymo):** 3x manager spot bonus awards, 9x peer bonus awards. (2019/2020)
- **UNSW Deans Honours List:** Dean's award (2016). Highly Commended (2017). Highly Commended (2018).
- **NICTA-UNSW Undergraduate Scholarship:** Total award: \$48,000 over 4 years (2015 – 2018)

PERSONAL PROJECTS

- **libopencm3 & Tomu:** Upstreamed libopencm3 driver framework & USB stack support for the Tomu project. (tomu.im), an open-source 2-factor authentication device.
- **YouTube Channel:** I have a small electronics YouTube channel with 5k subscribers. My projects have been featured on Hackaday (see: goo.gl/n4SzKu and goo.gl/8BmdzP). A few videos have > 50,000 views (youtube.com/c/vk2seb).
- **2.5GHz VNA Adapter:** Designed & built a 2.5GHz 2-port VNA adapter which allows 2-port software defined radios to perform S-parameter measurements (details here).

SKILLS

C · C++ · Python · Linux · Real-Time Systems · KiCAD · Altium · RF/Microwave · Product Bringup