Daniel Hiranandani

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RESUME

Work Experience:

Google Software Engineer — Nov 2020 – Current

Senior Software Engineer

Pixel Hearables/Wearables IC & Tech Lead/Manager — Aug 2022 – Current

- Led/managed Audio Experiences software team of 6 for Dynamic Spatial Audio, Premium Audio, Adaptive ANC, Conversation Detection, Audio features, codec control, case tones, audio debugging tools, and more shipping on-time for 2024 Pixel Buds Pro 2 launch, 2025 SW releases and cost-reduced HW platform [C/C++/Python]
- Designed/implemented BLE ISO Broadcast OTA system, including BLE unicast, device health monitoring, release tools, factory install and bootstrap tools, host tools, author of factory guides and factory point of contact, RISC-V based and Nordic devices with custom Zephyr BLE link layer, scaling from ~15 to ~50 simultaneous connections [C/C++, Zephyr, nRF5340-DK]
- Ported message-passing and application layers to new FreeRTOS/RISC-V-based SoC, implemented hardware drivers to interface with vendor SDK, owned devops and toolchain support for vendor [C/C++, CIPD, Gerrit, GN]
- Implemented team process improvements for task/feature/bug-tracking
- De facto team "fun champion" to lead offsites, logo/sticker design competitions, make team gifts, etc.

Platforms NetInfra IC — Nov 2020 – Aug 2022

- Automated and improved Switch Stack Release process to reduce software delivery cadence to Datacenters from >10 weeks to ~4 weeks [Python]
- Implemented dynamic partitioning solution in bootloader to persist logs/data across network switch installs [C/C++/Bash]

Verily Life Sciences — Sep 2016 - Nov 2020

Senior Software Engineer

Tech Lead of Verily Surgical On-Device Machine Learning — Apr 2020 – Nov 2020

- Designed architecture for running multiple on-device ML models for inference, in real-time, in a surgical setting to provide surgical guidance
- Implemented v1 end-to-end pipeline for video capture, processing, and running inference using an off the shelf camera [Python, C/C++, TensorFlow]
- Led team of ~4 to implement v2 pipeline using Docker containers

IC & Tech Lead of Verb Surgical Data Mgmt & Connectivity — Oct 2018 – Mar 2020

- Verb Surgical was an independent company, and co-venture between Verily and J&J. Verily SWEs were embedded at Verb and designed/implemented many core software pieces to create the multi-machine, multi-OS (QNX & Linux), multi-threaded surgical robotic platform, process management via systemd, etc. Verb was acquired by J&J in Q1 2020
- Led team of ~7 people across Verily and Verb to implement various critical logging, local network, and cloud-connectivity features [C/C++, Bash, SQL, Bazel]
- De facto DevOps secondary for Jenkins-based CI/CD for 150+ developer org
- Top 5 code committer and reviewer in 400+ person company over 2016 – 2020
- Author of several company-wide influential software eng. "Best Practices" guides

Software Engineer III

Individual Contributor for Verb Surgical — Sep 2016 – Oct 2018

- Designed/implemented all on-robot upload, download, and case/user/patient data processing software [C++]
- Designed/implemented HL7v2 data processor to integrate with OR devices [C++]
- "Go-to" person for troubleshooting/debugging majority of on-robot issues

Google Software Engineer Jun 2012 – Sep 2016

Software Engineer III

Google Fiber Apr 2016 – Sep 2016

- Hardware diag scripts/features built atop vendor switch chip SDK [Bash, C++]

Google Air Feb 2015 – Apr 2016

- Designed/implemented DS-301 and DS-402 CANOpen support for Elmo motor controllers for antenna positioning [C++]
- Designed/implemented generic multi-threaded CAN/CANOpen stack to control Elmo motor controllers (NMT, SDOs, PDOs, Rx filtering, error handling) [C++]

Software Engineer II

Platforms Networking Jun 2012 – Feb 2015

- Large-scale networks, SDN & OpenFlow, Vendor chip SDK [C/C++, Python]
- Owned development of network route/flow monitoring script [Python]

Google Platforms Networking Software Engineering Intern Jun 2011 – Sep 2011

- Ported network stack to evaluation hardware with new vendor switch chip [C/C++]

iControl Networks Software Engineering Intern Jun 2010 – Sep 2010

- Lead research and analysis of 802.11n repeater performance and reliability tests
- Independently designed and developed Atmel-based LED controller [C]
- Implemented Real-Time Clock, I2C, and SPI drivers on Atmel-based devices [C]

Raytheon Space and Airborne Systems Soft. Eng. Intern Jun 2009 – Sep 2009

- Designed/developed dynamic Command Input and Display Tool used for Radar hardware testing and analysis of output data [VBA, Perl, XML]
- Obtained United States Department of Defense Secret Clearance

Teaching Assistant at University of California, Santa Cruz Fall 2009 – Spring 2012

- Created grade retrieval/lecture download/grade plotting scripts/sites [Perl, PHP]
- Created cheating-detection software for Microsoft Office files [VBA]

AeroVironment Software Engineering Intern Jun 2008 – Sep 2008

- Created control/monitor software for Broadcom Ethernet chip on custom switches [C]
- Designed/implemented RS-422 protocol for multiple devices on a single bus [C]

Education:

University of California, Santa Cruz, September 2009 to June 2012
Master's of Computer Engineering, Emphasis in Computer Networks, GPA: 3.80

California Polytechnic State University, San Luis Obispo, September 2004 to June 2009
Bachelor's of Computer Engineering, GPA: 3.47

Skills:

- Proficient in C/C++, Python, Bash; Experience in VBA, Perl, Java, PHP, and Assembly
- Experience implementing TCP/IP, I2C, SPI, CAN/CANOpen, RS-232, RS-422, F-Bus
- Experience with Git, Gerrit, Jenkins, Docker.
- Firmware for Microchip PIC, Atmel ATMega/ATxMega, and Motorola 8-bit microcontrollers
- Proficient in using an oscilloscope, logic analyzer, multimeter, and a debugger to solve digital and analog issues caused by software and hardware

Selected Research:

Standards, Metrics, and Benchmarks in MANETs Sep 2010 – Jun 2012

- Researched metrics and scenario candidates for standardizing evaluations of Mobile Ad-Hoc Network (MANET) routing protocols
- Performed survey of ~200 published papers to characterize the state of the art of how MANET routing protocols were being evaluated

International Computer Engineering Experience (ICEX) Jan 2009 – Mar 2009

- Developed sonar maps of ancient underground water cisterns on island of Malta using Simultaneous Localization and Mapping (SLAM) algorithm and VideoRay ROV

- Created parser to extract/interpolate SmartTether GPS data to enhance map accuracy
- Designed and implemented nonlinear joystick controls for the ROV

Publications:

MANET Protocol Simulations Considered Harmful: The Case for Benchmarking, Hiranandani, D., Obraczka, K., and Garcia-Luna-Aceves, J.J., *IEEE Wireless Communications*, Aug, 2013.

The Malta Cistern Mapping Project: Underwater Robot Mapping and Localization within Ancient Tunnel Systems, White, C., Hiranandani, D., Olstad, C.S, Buhagiar, K., Gambin, T., and Clark, C.M, *Journal of Field Robotics,* Jul/Aug, 2010.

Underwater Robots with Sonar and Smart Tether for Underground Cistern Mapping and Exploration, Hiranandani, D., White, C., Clark, C.M, Gambin, T., and Buhagiar, K., *Proc. of VAST International Symposium on Virtual Reality, Archaeology and Cultural Heritage (VAST 09)*, Sep, 2009.

The Malta Cistern Mapping Project: Expedition II, Clark, C.M, Hiranandani, D., White, C., Boardman, M., Schlactman, M., Phillips, P., Kuehn, J., Gambin, T., and Buhagiar, K., *Proc. of International Symposium on Unmanned Untethered Submersible Technology (UUST 09)*, Aug, 2009.

U.S. Patents:

Techniques for improving processing of video data in a surgical environment, Daniel Hiranandani, Joëlle Barral, Patent Application #US20220202508A1.

Comprehensive Messaging System for Robotic Surgical Systems, James Shuma, Daniel Hiranandani, Joëlle Barral, Patent #11,185,379.

Fault-Tolerant, Frame-Based Communication System, Rolland Mitchell Koch, William Stuart Sechrist, Daniel Bailey Hiranandani, Patent #8,411,689.

Active Multi-Path Network Redundancy with Performance Monitoring, Rolland Mitchell Koch, William Stuart Sechrist, Daniel Bailey Hiranandani, Patent #8,867,381.

References:

Available Upon Request

Website:

More detailed information on research and projects available at www.danielhira.com