Arjun [No Last Name]

The B. John Garrick Institute for the Risk Sciences
University of California Los Angeles
Engineering VI - Room 550
Los Angeles, CA 90095

+1 (619) 962-2755
http://arjun372.com
arjun@engineering.ucla.edu
GitHub: arjun372, *LinkedIn:* arjun372

EDUCATION

University of California Los Angeles *Fall 2017*
B.S. Electrical Engineering

EMPLOYMENT

The B. John Garrick Institute for the Risk Sciences, UCLA *May 2018 - current*
Programmer/Analyst I, Hybrid Causal Logic Analyzer Web Application [JPL subcontract]

- Frontend developer for a risk assessment framework for assessing risk & reliability of COTS in space applications.
- Responsibilities include end-to-end application design for building quantification and analysis tools.

Center for SMART Health, UCLA *Jun 2016 - Dec 2017*
Software Developer - Undergraduate, Sensing At-Risk Populations (SARP) Project

- Development lead for remote health monitoring system currently servicing 300+ patients.
- Tasks included embedded development, database design, and API integration for web and mobile applications.
- Implementation of machine learning algorithms (TensorFlow) tackling time-series health-care datasets.
- Design and implementation of a cloud-based fleet management platform using AWS for 300+ devices.
- Enhanced system reliability by building automated test & data integration suites.

Embedded & Re-configurable Systems Lab, UCLA *Jan 2015 - Jun 2016*
Embedded Systems Developer - Undergraduate

- Development lead for 3 healthcare-based smartwatch applications (about to deploy to 900 patients).
- Improved wearable battery life by 300% by designing an efficient, multi-threaded CPU scheduler.
- Enforced system-wide HIPAA-compliance by securing patient data by implementing end-to-end AES encryption.

Wireless Health Institute, UCLA *Aug 2014 - Jan 2015*
Research Assistant - Undergraduate

- Developed clustering algorithms for predicting re-hospitalization risk of heart failure patients using EHR dataset. This work was presented at an ACM technical conference in 2014.

COURSEWORK

Digital Signal Processing, FPGA Design, Circuit Analysis, Algorithm Design, Computer Architecture, Feedback Control, Automata Theory, Introduction to CUDA

SKILLS

Programming: C/C++, Verilog, Java, MATLAB, Python, ReactJS, UNIX Shell, LaTeX
Hardware: EAGLE, NgSpice, Arduino, PCB Design & Etching, SMT soldering rework
Frameworks: Android, Xilinx, TI CodeComposer, Wear OS, TensorFlow, Docker, SpringBoot, OpenCV, Weka

PROJECTS

Human Activity Recognition on Smartwatch: Real-time detection using supervised learning on wrist-worn MEMS inertial motion sensor data. Distinguishes between *walking*, *running*, *lying down*, *sitting*, *standing* or *inactive*. 256 extracted features include energy & entropy in time & frequency domains. Classification using deep neural networks performs at $\geq$85% accuracy in real-world scenarios. Currently being used by 300+ patients in an LA rehab facility.

Indoor Location Fingerprinting Using Ambient Wi-Fi: Models multimodal WiFi RSSI as Gaussian Processes and performs Bayesian Estimation for probabilistic location classification. Time-segmented feature extraction on highly sparse datasets. Written for Android with near-real-time feedback and online supervised learning. $\geq$70% accurate within 3 seconds, $\geq$90% accurate with 10 seconds.

Convex Polygon Detector: Real-time polygon detection for low-powered ARM DSPs. The multistage pipeline includes IIR Deriche filter, progressive blurring kernel, gradient detection, non-maximal suppression, hysteresis thresholding and Hough Transform. Final step computes polygon edge count, orientation and side-lengths.

Analog Utility Meter Reader: Power consumption detection in real-time from analog dials in LA power meters using snapshots from mounted USB cameras. OpenCV implementation pipeline includes noise suppression, SIFT, circular Hough Transform & needle angle detection.

PUBLICATIONS

R. Malavalli, **Arjun**, N. Gupta, *"Indoor Localization Through Machine Learning on WiFi Fingerprints"*, International Conference on Indoor Positioning and Navigation (IPIN'17).

Bouchard K., Ramezani R., **Arjun**, Naeim A., *"Evaluation of Bluetooth Beacons Behavior"*, The 7th IEEE Annual Ubiquitous Computing, Electronics and Mobile Communication Conference (UEMCON'16), pp.1-3, IEEE, 2016.

B. Moatamed, **Arjun**, F. Shahmohammadi, R. Ramezani, A. Naeim, M. Sarrafzadeh, *"Low-cost indoor health monitoring system"*, Wearable and Implantable Body Sensor Networks Conference (BSN 2016), pp.159-164, IEEE, 2016.

PATENTS

PCT/US2016/037398: *"Subject assessment using localization, activity recognition and a smart questionnaire"*, A.Naeim, R. Ramezani, **Arjun**, B. Moatamed, M. Sarrafzadeh

US Provisional Application (62/330,730) filed May 2, 2016: *"Indoor Health Monitoring System"*, A.Naeim, R. Ramezani, **Arjun**, B. Moatamed, M. Sarrafzadeh