SWAROOP KUMAR PAL

swaroop.pal1088@gmail.com | swaroop.pal@intel.com | swarooppal.wordpress.com | github.com/dv-dt-spal | Phone: 469-789-6498

EDUCATION

M.S. in Computer Science, University of Texas at Dallas. GPA: 3.6/4 — Dec 2016

B.Tech in Electrical & Electronics Engineering, Siksha O Anusandhan University. GPA: 8.32/10 — May 2011

Stanford SCI54 AI Master Class, Stanford Continuing Studies (AR-AI Pet Project), Grade A — Sep 2018

Computer Vision & Deep Learning Nanodegree, Udacity — Apr 2019 - Present

WORK EXPERIENCE

Intel, Santa Clara - Software Engineer — Nov 2017 - Present

- Developing various modules and performing Performance Analysis of Intel GNSS Software library in C++.
- Created visualization & cloud regression tools (Python/Matlab) for team. Impacts weekly customer meeting.
- Assisted in setting up Tensorflow training for Sensor Fusion modules developed by intra-organizational team.

Aireal, Dallas - Augmented Reality Engineer — Aug 2016 - Oct 2017

- Developed Geospatial AR SDK in Unity including plugins using Android SDK/NDK & Asset bundles in AWS S3.
- Research & POCs for integrating new features. Prototyped apps for potential investors & clients.
- Applied existing mathematical models for SLAM, GPS & IMU fusion. Achieved smooth pose estimation.
- Developed benchmarking & visualization tools to resolve bugs & form feedback loop for enhancement.

BMW, Mountain View - Product Innovation Intern — May 2016 - Aug 2016

- Prototyped 3 VR & AR applications in 14 weeks involving sensor fusion, computer vision & navigation system.

Intel, Hillsboro - Software Development Engineer Intern — Sep 2015 - Jan 2016

- Developed an Internet of Things (IoT) gateway module in C++ to capture BLE beacon data using BlueZ APIs.
- Developed an Android App to configure BLE tags in GATT profile. Completed tasks in 3 weeks after joining.
- **Received Best Demo award & Intel recognition** for rapid prototyping of the proof of concept project.

Future Immersive Virtual Environments (FIVE) Lab, UT Dallas - Graduate Researcher — Jan 2015 - Dec 2016

- Developed interactive Virtual Reality apps for research & user studies. Published 2 papers in a year.

TATA Consultancy Services (Jaguar Land Rover), India - Embedded Systems Engineer — Oct 2011 - July 2014

- Assisted Jaguar Speech architect team for app development in C++. Standardized board bring-up process.
- Handled the software release for 11 baselines and prototype setups to demo apps to Jaguar Management.
- Automated functional testing using shell scripts & test framework (C++). It reduced week's effort to hours.

PROJECTS

Silver Unicorn - An Augmented Companion Robot, Reality Virtually Hack, MIT Media Lab

- Developed a XR Companion Robot with tangible interface. Scripted interaction & networking components.
- **Awarded 1st prize in Getting things done and doing business** (engineering) category.

IoTxMR - Smart Home & Mixed Reality Fusion on Hololens - Microsoft Hololens Hackathon (48 hours)

- Developed app & hardware to provide spatial UI for cross-platform devices. Featured in Digital Trends.
- Similar concept along with Social Mixed Reality aspect was prototyped on Magic Leap in ATT SF Hackathon.

Mutual Exclusion and Broadcast Service in a Distributed System(C++)

- Implemented a spanning tree using distributed algorithm to create a broadcast & mutual exclusion service.
- Developed a utility System Layer in C++ consisting of TCP/IP Sockets, POSIX Semaphore, Threads and Mutex.

Positional tracking using OpenCV for AR VR Apps in Samsung Gear VR, FIVE Lab UT Dallas

- Developed a framework integrating OpenCV & Unity on Android. It Supports background camera capture.
- Implemented Optical Flow algorithm for positional tracking using OpenCV for Android.

SKILLS

Programming: C++, C#, C, JAVA, POSIX, Android, BLE, DBus, OpenCV, Shell, TCP/IP, BlueZ, Python, TensorFlow
Hardware: Oculus Rift, Infotainment HW, Galileo, Arduino, Project Tango, Hololens, HTC Vive, Magic Leap
Tools: Unity, AR/VR SDKs, Android Studio, ARCore, ARKit, Visual Studio, Git, Robot Operating System

PUBLICATIONS

"The Benefits of Rotational Head Tracking" IEEE 3D User Interfaces (3DUI) March 2016. (**Presented at conference**)

VOLUNTEER EXPERIENCE

- Assisted in post-production (apps for rendering videos in Unity) of an immersive VR movie. Credits on IMDB.
- Presented Virtual Reality talk with code dive-in at Computer Visionaries Meetup, Dallas Entrepreneur Center.