

SURYA TEJA PARUCHURI

Member, IEEE

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<https://stparuchuri.github.io/>

RELEVANT EXPERIENCE

Modem Engineer, Qualcomm Technologies Inc.

Boxborough MA, Aug 2020 — Present

- Implemented bit-exact firmware for 5G NR W1 and W2 pre-coder selection, MRC (Maximal Ratio Combiner), demodulation (LUT based QPSK, 16-QAM & 64 QAM slicer) and various linear algebra modules on mDSP6's vector accelerator in assembly, C and Python using SIMD, VLIW, modem specific composite instructions, hardware loops, and Out-of-Order (OOO) execution.
- Designed & implemented RxFFT FIFO buffer in C for Qualcomm's future wearable baseband modem receivers.
- Implemented FW logging modules for NR CSF firmware for easy debugging by Systems and Test Engineers.
- Contributed in firmware design & code reviews, train new employees, firmware design documentation etc.

Senior Engineer, Spirent Communications

Eatontown NJ, Jan 2020 – July 2020

- Implemented a multi-threaded dynamic rate convertor library (polyphase decimator & interpolators DSP blocks, thread manger, data sourcer, and sink) in C++ to resample large fading files (> 2 GB)
- Implemented closest interpolation rate searching algorithm within specified error specification in C++.

Embedded Engineer, Spirent Communications

Eatontown NJ, May 2018 – December 2019

- Designed Vertex's dynamic rate-conversion sub-system to support arbitrary scaling of fading Doppler signals to an accuracy of 0.1 Hz using multi-rate filter banks in MATLAB.
- Improved Lognormal fading DSP firmware performance on TMS320C6678 by x3.84 (389,000 to 101,000 cycles) using processor intrinsics, reducing loop carried bound and software pipelining (out of order assembly execution).
- Designed, implemented and delivered 3GPP High Speed Train Channel model DSP firmware on TMS320C6678.
- Lead a team of 2 Developers & a QA Engineer to deliver 2 major releases of Spirent's Live2Lab – for 5G NR.
- Implemented new processing engine's routines for 5G NR Over-The-Air MIMO testing of gNodeB in C#.
- Translated product manager's requirements to design specifications, determined project timelines, developed test cases, documented new feature details in user manual and trained product specialists/support team.

Wireless Engineering Intern, Skylark Wireless LLC

Houston TX, November 2017 – May 2018

- Improved Iris SDR's SFDR by 28.571% (9.52 dBc) by implementing self-calibration firmware to mitigate LO Feed Through, DC Offset and IQ impairments of LMS7002M --2X2 MIMO RFIC, using Python SWIG, SoapySDR and C++.
- Implemented a DOCSIS 3.1 to UHF Band Upstream Up conversion using LMS7002EVB and demoed to a client.
- Assisted in Iris software defined radio (SDR) Rx Sensitivity tests by setting up synchronized Iris SDR test-setup.
- Performed Quality Assurance-power sequence tests on 112 Iris-SDRs to characterize inrush current on Iris SDRs.
- Made a Raspberrypi image to remotely power cycle FAROS Base Stations (inaccessible after installation).
- Recommended Microsoft Air Band Grant Initiative to raise a capital of \$75,000.00 for the start-up.

SKILLS

- ✓ **Languages & libraries:** MATLAB, C, C++, C#, assembly, bash, python, numpy, scipy, pandas, algorithmic C
- ✓ **Architectures:** Texas Instr' c66xx & c320x DSP, Qualcomm's Hexagon (Q6 DSP), Nvidia (Pascal);
- ✓ **RTOS & Tools:** SysBIOS, QuRT, C66xx Compiler, assembler; Hexagon compiler, assembler.
- ✓ **Typesetting & Productivity:** LaTeX, VIM, Git, Perforce, GDB, SWIG, make, CMake, Jenkins, Ant Build, Doxygen.

EDUCATION

University of Maryland, College Park, MD.

Master of Science in Telecommunications

GPA: 3.83

May 2017

Awards: Academic Excellence Scholarship, Feb.'17

Vellore Institute of Technology, Vellore, India.

Bachelor of Technology in Electronics and Communication Engineering

GPA: 8.35/10

May 2014