

# AURNAB MANDAL

130 Descanso Dr, Apt 447 San Jose, CA 95134

☎ 608-722-0967

✉ aurnab95@gmail.com

🌐 linkedin.com/in/aurnab-mandal

🐙 github.com/aurnab95

## Education

### University Of Wisconsin Madison

*Masters of Science, Electrical and Computer Engineering*

Sep 2021—May 2023

Madison, WI

### Birla Institute Of Technology And Science, Pilani

*B.E.(Hons.), Electrical And Electronics Engineering*

Aug 2014—May 2019

Hyderabad, Telangana

## Experience

### Advantest Inc.

*R&D Hardware Engineer*

Jun 2023—Present

San Jose, CA

- Primary PCB designer creating board level schematics for Ultra-wide Band Phase Delay on Arrival (PDOA) module from concept to release. Responsible for bring-up and derating of Advantest custom PCAs such as instrument switching modules, RF extension modules, diagnostic loadboards, frequency up/down conversion mixers, PLL clock synthesizers.
- Assisted layout engineers through several tape-outs, ensuring high-performance and efficient designs in Siemens Xpedition. Specialized in operating Vector Network Analyzers, signal generators & analyzers, BERT.
- Developed test programs in V93k SoC ATE for fast correlation between Wave Scale RF Channel Cards (6-18 GHz) (DUT) and performance verification bench for major RF-IC manufacturers. Devised EVM measurement tests using 64-QAM, 50 MHz src modulated waveform to validate system signal integrity. Selected components such as LDO, op-amps, phase shifters, SPDT/SP4T RF Switches, RF power detectors for optimal system performance.
- Carried out compliance testing for high speed signalling and data transfer - PCIe Gen 3 boards. Fine tuned a PCIe repeater by adjusting Equalizer (14.6 dB), De-emphasis (-3.5dB) settings for maximal eye opening 350-700 mV and achieved data rates up to 8 GT/s. Used I2C, SPI serial protocols for interfacing with memory-EEPROM and DAC.

### J&J Medtech

*Embedded Systems Co-op*

Feb 2023—May 2023

Boston, MA

- Created multi threaded applications in C/C++ on an embedded real-time QNX controller to check HW-FW compatibility of Impella heart pump motor driver and AIC software. Worked with USB device drivers using BSPs.

### Otsuka America Pharmaceutical Inc.

*Digital Medicine Hardware Intern*

June 2022—Aug 2022

Hayward, California

- Worked on physiological functions of a wearable sensor which include Ingestible sensor detection, heart rate monitoring.
- Tested and debugged a nRF52840 SoC with an ARM Cortex-M4 processor using sophisticated acoustic methods.
- Revamped an auto-regressive model to add synthetic noise at 3, 6, 9 nV/rtHz to ADC data files. Used a R-S UPV audio analyzer to study FFT, OLA STFT transforms of IEM signals. Formulated an auto-correlation function based ML model to calculate thresholds improving the efficiency of IEM sensor detection by 5%.

## Projects

### Sub-band Signal Analysis and Reconstruction | *Signal Block Diagrams, Sub-band Coders*

Jan 2022—May 2022

- Applied decimators to retain even and odd samples and examined results for aliasing of cosine signals.
- Implemented a two-band signal analysis and reconstruction system with -3dB cutoff for both high and low pass filters.

### Adaptive FIR Filter Design | *Active Noise Cancellation, MATLAB*

Sep 2021—Dec 2021

- Designed a MMSE FIR filter with 128 taps using LMS algorithm achieving SNR of 25dB and 10dB attenuation.
- Compared SNRs to find optimum minimum step size for the algorithm to converge and implemented the filter on a TMS3206713 DSP processor.

## Publications

### A portable 3-D printed electrochemiluminescence platform with pencil graphite electrodes for point-of-care multiplexed analysis with smartphone-based read out

-M Salve, A Mandal, K Amreen, BP Rao, PK Pattnaik, S Goel *IEEE Transactions on Instrumentation and Measurement* 70, 1-10, 10 September 2020

## Technical Skills

MATLAB, Python, Adobe Audition, TF32-Time Frequency Analysis Software, Siemens Xpedition, C, C++, CCStudio, LTspice, HSpice, OAI-5G, Wireshark, ADS RF, CST 3D EM Analysis