Dipankar Shakya

NYU WIRELESS, 370 Jay Street, Metrotech 9th Floor, Brooklyn, New York 11201

+1-347-280-8468 | dshakya@nyu.edu

Google Scholar | LinkedIn

Education

New York University, New York, USA

Ph.D. in Electrical Engineering   *September 2019- Present*

M.S. in Electrical Engineering   *September 2019- December 2021*

- Advisor: Prof. Theodore S. Rappaport
- Awards: School of Engineering Fellowship.
  Theodor Tamir Award for the Best Master's Thesis in Electrical and Computer Engineering.
- Relevant Courses: Analog IC design, Introduction to VLSI design, RF and microwave systems engineering, Wireless Communications, Electromagnetics, Digital communications, Digital signal processing, Real Time Embedded Systems, Probability & stochastic processes, Machine Learning.

Kantipur Engineering College, Tribhuvan University, Nepal

B.E. Electronics and Communications Engineering, Distinction   *September 2012- September 2016*

Research

THz Metrology

- Design of a THz measurement facility integrating vector network analyzer (VNA) with anechoic chamber and probe station for THz circuits, devices, and on-chip antennas.

Evaluation board for channel sounder integrated circuit

- Designed and fabricated a four-layer evaluation printed circuit board (PCB) for a mixed-signal channel sounder integrated circuit (IC) fabricated in 65nm CMOS [1].
- Tested the performance of the PCB for interfacing with 142 GHz channel sounder at NYU WIRELESS using RF test equipment: oscilloscope, VNA, spectrum analyzer, and arbitrary waveform generator.
- Integrated the fabricated PCB with existing 142 GHz channel sounder to conduct measurements [2].

Evaluation of 180 GHz patch antennas using manual RF probe station

- Calibrated the Summit 11000B manual RF probe station for probing and characterization of patch antennas in the 140-220 GHz range.
- Measured S-parameters of 180 GHz patch antennas on the calibrated probe station environment.

Indoor, Outdoor, and Factory wireless channel measurements at 142 GHz

- Operated and conducted propagation measurements with the 142 GHz sub-THz channel sounder hardware for indoor, outdoor, and factory scenarios for 6G applications in Brooklyn, NY.

Work Experience

Nokia Bell Labs   New Providence, New Jersey

mmWave systems Summer Intern (remote)   *June 2021-August 2021*

- Supervisor: Dr. Reinaldo A. Valenzuela
- Investigated outdoor and indoor coverage for 5G cellular deployments in urban scenarios via system simulations using published models [3].

International Center for Integrated Mountain Development (ICIMOD)   Lalitpur, Nepal

Engineer for Community Based Flood Early Warning Systems (CBFEWS)   *April 2018-May 2019*

- Enhanced the telemetry-based water level monitoring system (TWLMS) hardware used in CBFEWS implemented in Afghanistan, India, Nepal, and Pakistan; Co-authored the TWLMS resource manual [4].

Sustainable Eco Engineering (SEE)   Lalitpur, Nepal
Embedded Systems Design Engineer   *May 2017-April 2018*
- Led the development of TWLMS for flood monitoring in ICIMOD's CBFEWS framework [4].

Research Interests

THz Metrology, 5G/6G Communications, On-chip Antennas, RFICs, Embedded Systems, IoT, NTNs.

Accolades

Theodor Tamir Award for Best Master's Thesis in Electrical and Computer Engineering 2021,
Tandon School of Engineering, New York University, USA
Thesis title: Towards Channel Sounder Miniaturization: Prototyping Circuit Design for A Wideband Sliding
        Correlation Baseband IC in 65 nm CMOS and an RF Probe Station Environment.
Best Major Project Award 2016,
Kantipur Engineering College, Tribhuvan University, Nepal
Project Title: Computer Numerical Control: Geometric-Craft (CNC: G-Craft)
A 3-axis CNC machine designed to cut or engrave on materials over a 20" × 24" cutting area.
1st prize: LOCUS 2016- National Technological Festival Project Competition (Open Hardware category),
Institute of Engineering, Nepal
Project Title: Heliplane-20
A remote-controlled model of a tiltrotor aircraft that can transition between a helicopter and a plane.

Skills

Software:
- Altium Designer, Advanced Design System (ADS), High Frequency Structure Simulator (HFSS), Cadence Virtuoso, MATLAB/Simulink, Python, LTSpice for circuit and antenna design and analysis.
- C/C++, ARM Assembly, NI LabView, Arduino Design Environment, Atmel Studio, Codewarrior for XBee PRO, Android Studio for embedded systems and hardware.

Hardware:
- Experience using Oscilloscopes, Arbitrary Waveform Generators, Spectrum Analyzers, Vector Network Analyzers, and Manual Probe Station for ongoing research work.
- Experience using LPKF Protomat D104 for PCB fabrication and reflow soldering for assembly.

Publications

[1] D. Shakya, T. Wu, and T. S. Rappaport, "A Wideband Sliding Correlator based Channel Sounder in 65 nm CMOS: An Evaluation Board Design," in *2020 IEEE Global Communications Conference (GLOBECOM 2020)*, Taipei, Taiwan, Dec. 2020, pp. 1–6. Link: https://ieeexplore.ieee.org/document/9322622

[2] D. Shakya, T. Wu, M. E. Knox and T. S. Rappaport, "A Wideband Sliding Correlation Channel Sounder in 65 nm CMOS: Evaluation Board Performance," in *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 68, no. 9, pp. 3043-3047, Sept. 2021. Link: https://ieeexplore.ieee.org/document/9447829

[3] D. Shakya, D. Chizhik, J. Du, R. A. Valenzuela, and T. S. Rappaport, "Dense Urban Outdoor-Indoor Coverage from 3.5 to 28 GHz," in *2021 IEEE International Conference on Communications (ICC 2022)*, Seoul, South Korea, May 2021, pp. 1–6. (Accepted)

[4] D. Shakya, V. R. Khadgi, N. Bajracharya, S. R. Bajracharya, S. K. Rai, and N. S. Pradhan, "Community based flood early warning system: Resource manual - Revised edition for telemetry-based instrumentation." ICIMOD, May 2019. Link: https://lib.icimod.org/record/34493