Atul Bansal

5th Year Doctoral Student
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Country of Residence: USA

Education

Carnegie Mellon University — Pittsburgh, PA
- *PhD Candidate in Electrical and Computer Engineering; GPA: 4.00/4.00* — *Aug 2019 – Present*
  Advisors: Prof. Swarun Kumar and Prof. Bob Iannucci

Indian Institute of Technology, Kharagpur — Kharagpur, India
- *M. Tech. and B. Tech.(Honors) in Electronics and Electrical Communication Engineering* — *Jul 2014 – May 2019*
  Advisors: Prof. Gautam Saha

Publications

1. **Battery-free Wideband Spectrum Mapping using Commodity RFID Tags**, *Mohamed Ibrahim,* ***Atul Bansal****, Kuang Yuan, Swarun Kumar, Peter Steenkiste, ACM MobiCom 2023*
2. **OwLL: Accurate LoRa Localization using the TV Whitespaces**, ***Atul Bansal****, Akshay Gadre, Vaibhav Singh, Anthony Rowe, Bob Iannucci, Swarun Kumar, ACM/IEEE IPSN 2021*
3. **Poster: Does Ambient RF Energy Suffice to power Battery-free IoT?**, ***Atul Bansal****, Swarun Kumar, Bob Iannucci, ACM MobiSys 2020*

Research Projects:

- **OwLL: Accurate LoRa Localization** — Carnegie Mellon University
  Prof. Swarun Kumar and Prof. Bob Iannucci — *Jul 2020 - Oct 2020*
  - Developed an accurate LoRa based outdoor localization system which performs localization by frequency hopping in ISM and TV whitespace bands
  - Ensured low power consumption by developing a smart frequency selection algorithm to minimize the number of frequencies hopped
  - Obtained an overall 9 m median error in both Line of Sight and Non-Line of Sight situations tested across an area of 66000 sq.m
- **RFIMap: Wideband Spectrum Sensing using RFID** — Carnegie Mellon University
  Prof. Swarun Kumar — *Aug 2022*
  - Developed a wideband spectrum mapping system using commodity RFID tags by extracting channel information from reflected RFID signals across multiple frequencies
  - Performed accurate localization of any transmitter by trilaterating using the obtained channel information across multiple frequencies
  - Obtained a median error of 3.19 dB in signal power estimation across all frequencies in a 3D room

Internships

- **Office of the CTO** — Microsoft Azure for Operators
  Manikanta Kotaru and Victor Bahl — *Jun 2022 - Aug 2022*
  - Worked on developing a novel system based on 5G ORAN protocol stack with many applications.
  - Performed simulations to confirm validity and then finally created a basic bare bones demo of the whole system on a 5G testbed

Scholastic Achievements

- Awarded Travel Grant to attend MobiCom 2023 at Madrid, Spain
- Awarded the Ben Cook Presidential Graduate Fellowship - 2022-23
- CMU ECE Department Recognition Award for Exemplary Qualifying Exam Performance, Fall 2021
- Awarded CIT Dean Fellowship 2019
- Kishore Vaigyanik Protsahan Yojna (KVPY) 2013-14 scholar

Programming Skills

- **Languages:** C, C++, Python, MATLAB
- **Softwares:** Visual Studio Code, mbed, Arduino, OpenCV, Wireless Toolboxes