

# Avishek Banerjee

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## TECHNICAL SKILLS

**Programming :** Java • Matlab • Python • C • C++  
Javascript • CSS • PHP (Over 5000 lines)

**Platform :** React, Node.js, OpenWrt, WARP, 8085, Elastic Search, Grafana, Agile, Docker, Wireshark, Linux Kernel

**Familiar :** • Android • MySQL • Typescript

**General :** Data Structures, Algorithm, Object Oriented Programming

## EDUCATION

**The Ohio State University**, Columbus, OH, USA

• PhD, Computer Science and Engineering(CSE)

March, 2023

• Masters, Computer Science and Engineering(CSE)

May 2022

CGPA: 3.89/4.00

**Jadavpur University**, Kolkata, India

BE in Electronics and Tele Communication,

July 2017

CGPA: 9.4/10.0

## EXPERIENCE

**Research Scientist**

Nokia Bell Labs (Decentralized Systems Research)

April 2023 - Present

• Developing innovating wireless sensing systems

**Graduate Researcher: CO-SY-NE Group**

The Ohio State University

2017-2023

**PhD SWE Intern**

Meta (Facebook), Menlo Park

May 2022 - July 2022

• Worked with Facebook Connectivity (Wireless Platforms and Protocols Team)

• Designed and developed software for supporting modern wireless technologies

**Technologies:** *Linux Kernel, C, C++, Python*

**Graduate Teaching Assistant**

The Ohio State University

August 2017 – July 2019

**MITACS Globalink : Research Internship**

Ryerson University, Toronto, Canada

May - July 2016

Worked for 12 weeks on developing a game theoretic model for smart grids.

## PUBLICATIONS

[Google Scholar](#)

- **HORCRUX:** Accurate Cross Band Channel Prediction. Avishek Banerjee, Xingya Zhao, Vishnu Chhabra, Kannan Srinivasan, Srinivasan Parthasarathy, **MobiCom 2024**, 30th Annual International Conference On Mobile Computing And Networking. [Paper Link](#)
- **Fewer Demands, More Chances:** Active Eavesdropping in MU-MIMO Systems. Xingya Zhao, Anwesha Roy, Avishek Banerjee, and Kannan Srinivasan. 2024. In Proceedings of the 17th ACM Conference on Security and Privacy in Wireless and Mobile Networks (**WiSec 2024**). Association for Computing Machinery, New York, NY, USA, 162–173. [Paper Link](#)
- **RFTemp:** Monitoring Microwave Oven Leakage to Estimate Food Temperature. **UbiComp/IMWUT**, Proc. 2022 ACM Interact. Mob. Wearable Ubiquitous Technol. 5, 4, Article 144 (Dec 2021), 25 pages. [Paper Link](#)
- **WiNE:** Monitoring Microwave Oven Leakage to Estimate Food Nutrients and Calorie. **UbiComp/IMWUT**, Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 6, 3, Article 99 (September 2022), 24 pages. [Paper Link](#)

- **ReFlex:** Enabling Full Duplex Relay Cluster. 2023 15th International Conference on COMMunication Systems & NETworkS (**COMSNETS**) [Paper Link](#) [[Best All-round Paper 1st Runners-up](#)]
- **PROWESS:** An Open Testbed for Programmable Wireless Edge Systems. 2022 ACM Practice and Experience in Advanced Research Computing (**PEARC**) [Paper Link](#)
- Enabling Detection of Plastic Debris on Water Surface Using Wireless Signals, A. Mahanti, A. Banerjee and K. Srinivasan, **IEEE Sensors Letters**, vol. 5, no. 7, pp. 1-4, July 2021, Art no. 3500904. [Paper Link](#)
- Optimal scheduling of distributed energy resources in energy market, S. Basu, S. Ghosh, A. Banerjee and U. Maulik, 2015 Annual IEEE India Conference (**INDICON**), New Delhi, India, 2015, pp. 1-6. [Paper Link](#)

## PATENTS

- Monitoring Microwave Oven Leakage to Estimate Food Temperature and Food Composition. Avishek Banerjee, Kannan Srinivasan. [Provisional Patent Filed](#)
- A Method for Accurate CrossBand Channel Prediction. Avishek Banerjee, Srinivasan Parthasarathy, Kannan Srinivasan. [Provisional Patent Filed](#)
- Trustless Subscriber Reidentification and SIM Swap Prevention Using Biometrics and Blockchains. Novak Boskov, Akshay Jajoo, Avishek Banerjee, Nirupama Ravi. [Patent under Filing](#)
- Opti-Vision: A smart glass system for passive testing to determine a profile for a user's light adaptivity to personally tune display brightness settings. Avishek Banerjee, Marja Pauliina Salmimaa. [Patent under Filing](#)

## TALKS

- HORCRUX: Accurate Cross Band Channel Prediction. Washington, DC, Mobi-Com 2024. [Upcoming Conference Talk](#)
- ReFlex: Enabling Full Duplex Relay Cluster. Bengaluru, India COMSNETS 2023. Best Paper Runner's Up. [Conference Talk](#)
- WiNE: Monitoring Microwave Oven Leakage to Estimate Food Nutrients and Calorie. Georgia Tech University, USA IMWUT 2022. [Conference Talk](#)
- RFTemp: Monitoring Microwave Oven Leakage to Estimate Food Temperature, Georgia Tech University, IMWUT 2021. [Conference Talk](#)
- Topic : Estimating Food Temperature and Nutrients by Monitoring Microwave Oven Leakage, The Ohio State University, USA. [Invited Talk](#)

## HONORS AND ACTIVITIES

- 2024: PC Artifact Evaluation Sensys 2024
- 2024: Reviewer IEEE ICECET 2024
- 2024: Reviewer IEEE ICECCME 2024
- 2024: Reviewer IEEE LANMAN 2024
- 2024: Mentored [LockGuard](#) (winner of UPitchNJ)
- 2023-24: Mentored Summer Interns
- 2023: Reviewer IEEE ICECET
- 2023: Best All-round paper 1st runners up [COMSNETS 2023](#)
- 2022: Interviewed and research covered by [New Scientist Magazine](#)
- 2020: Quinlan – Graduate Teaching Award
- 2017: Qualified for the prototype round of [WINS Challenges](#)
- 2016: Selected for [Mitacs Globalink Research Internship](#)

## RESEARCH

### Passive Self-Calibrating Water Meters

Nokia Bell Labs

2023 - Ongoing

Working with Decentralized System Research team to develop an innovative sensing system to measure water flow rates through pipes.

**Technologies:** *Python, IoT*

### Cross-band Channel Prediction

The Ohio State University

2022 - 2023

Worked with [Prof Kannan Srinivasan](#) and [Prof Srinivasan Parthasarathy](#) to use Neural Network models to predict cross-band wireless channels for MU-MIMO.

**Technologies:** *Python, USRP, WARP*

### Active Eavesdropping in MU-MIMO Systems.

The Ohio State University

2022 - 2023

Worked with [Prof Kannan Srinivasan](#) and Xingya Zhao to develop active eavesdropping for MU-MIMO.

**Technologies:** *Python, USRP, WARP*

### Monitoring Microwave Oven Leakage to Estimate Food Temperature

The Ohio State University

May 2020 - May 2021

Worked with [Prof Kannan Srinivasan](#), on developing a wireless system to estimate the food temperature inside the microwave oven by sensing the microwave leakage through the oven window. Patent submitted.

**Technologies:** *WARP, MATLAB*

### Monitoring Microwave Oven Leakage to Estimate Food Nutrients

The Ohio State University

May 2020 - May 2021

Worked with [Prof Kannan Srinivasan](#), on developing a wireless system to estimate RF properties of food and classify them based on the nutrient composition by sensing the microwave leakage through the oven window. Patent is submitted. Research published in [New Scientist](#) magazine. [Article link](#)

**Technologies:** *WARP, MATLAB, Python*

### Full Duplex Relay Cluster

The Ohio State University

December 2018 - Present

Working with [Prof Kannan Srinivasan](#) and [Lu Chen](#) on developing an end to end physical layer in-band full duplex system using full duplex relays and its application.

**Technologies:** *WARP, MATLAB, FPGA*

### POWWOW osuwireless overlay with Edge Computing and Core Computing support

The Ohio State University

On-going

Working with [Prof Kannan Srinivasan](#), [Prof Anish Arora](#) and [Prof Rajiv Ramnath](#) on developing an end-to-end system extending osuwireless to allow IoT devices to WiFi/BLE/USB connect to access points across campus.

**Technologies:** *USRP, MATLAB, Elastic Search, Grafana, Docker*

### Portable D2D Networks for Emergency Community Messaging

The Ohio State University

May 2018 - July 2019

Worked with [Prof Kannan Srinivasan](#) and [Rupen Mitra](#) to create **PODNETS**, an application layer protocol that brings unconnected communities back on to an off-grid network that enables them to communicate using smartphones. Publication is submitted.

**Technologies:** *Android SDK, Java, MATLAB*

### Optimal Scheduling of Distributed Energy Resources in Energy Market

Jadavpur University

Mar 2015 - May 2017

Worked with [Prof Ujjwal Maulik](#) and developed a model for optimal scheduling of DERs and proposed its application in energy market. Publication accepted in [IEEE](#)

Indicon 2015

**Technologies:** *Python, MATLAB*

## PROJECTS

### Wireless Communication

**Smart Grid IoT:** Developed a simulation model to support the Smart Grid communication using IOT devices.(LORA and zigbee). We optimized cell designs and maximum capacity to improve our system. **Technologies:** NS3, Python, Matlab

**HTAP in IoT test-bed:** Hybrid transaction/analytical processing (HTAP) integration into campuswide wireless IoT test bed. Develop a use-case to count number of people inside a room using wireless sniffing **Technologies:** USRP, Grafana, Elastic Search, Docker, MySQL

### Machine Learning

**LSTM Texter :** Developed a LSTM based poetry and quotes generator based on character and word. **Technologies:** Python, Keras.

**English Premier League Manager :** Machine Learning based team selection for English premier league teams. Developed features based on individual players. Predicted the score of the match based on previous knowledge **Technologies:** Python, Keras.

### Software Development

**Capstone Project with Affordable (Startup) :** Developed the login functionality of **Affordable** (front and backend)Application. **Technologies:** C++,REACT,JavaScript, HTML/CSS

Designed a LISP Interpreter : **Technologies:** C++.

## RELEVANT COURSES

### Graduate

Computer Networking and Internet Technologies

Digital Signal Processing

Wireless Sensor Networks, Iot and MANET

Computer Architecture

Speech and Lang Processing

Machine Learning

Programming Language

### Under Graduate

Wireless Communication

Microprocessor

Electronic Design Automation