

## RESEARCH INTERESTS

Sustainable Computing, Distributed Systems, Networking

## SKILLS

C, Java, Python, DPDK, Tensorflow, Keras

## EDUCATION

### University of Massachusetts, Amherst, USA

Aug '21 – Present

PhD Candidate (4th year), College of Information and Computer Sciences (GPA: 3.90/4)

**Advisor:** Prof. Ramesh K. Sitaraman (ramesh@cs.umass.edu)

**Expected Graduation Date:** Fall 2026

### Indian Institute of Technology, Bombay, India

Jul '18 – Jun '20

Master of Technology (M.Tech), Dept. of Computer Science and Engineering (GPA: 9.70/10)

**Thesis:** Design, Development and Optimization of the User Plane Function (UPF) Dataplane in 5G

**Description:** Explored various design options & built a high-performance DPDK-based UPF dataplane.

Developed two models for the UPF dataplane (Run-to-Completion & Pipeline) as part of thesis.

**Advisor:** Prof. Mythili Vutukuru

### Jadavpur University, Kolkata, India

Jul '12 – May '16

Bachelor of Engineering (B.E), Dept. of Computer Science and Engineering (GPA: 8.47/10)

## SELECTED PUBLICATIONS

Below list is in reverse chronological order. The full list of publications is available on [Google Scholar](#).

### Zero-Shot Carbon Intensity Forecasting with Time Series Foundation Models

Under review

Kang Yang, **Diptyaroop Maji**, Prashant Shenoy, Ramesh K. Sitaraman, Mani Srivastava

### A First Look at Node-Level Curtailment of Renewable Energy and its Implications

e-Energy '25

**Diptyaroop Maji**, David Irwin, Prashant Shenoy, Ramesh K. Sitaraman

In the 16th ACM International Conference on Future Energy Systems (e-Energy), June 2025

### The Green Mirage: Impact of Location- and Market-based Carbon Intensity Estimation on Carbon Optimization Efficacy [pdf] [Best paper runner-up]

e-Energy '24

**Diptyaroop Maji**, Noman Bashir, David Irwin, Prashant Shenoy, Ramesh K. Sitaraman

In the 15th ACM International Conference on Future Energy Systems (e-Energy), June 2024

### Bringing Carbon Awareness to Multi-cloud Application Delivery [pdf]

HotCarbon '23

**Diptyaroop Maji**, Ben Pfaff, Vipin PR, Rajagopal Sreenivasan, Victor Firoiu, Sreeram Iyer, Colleen Josephson, Zhelong Pan, Ramesh K. Sitaraman

In the 2nd Workshop on Sustainable Computer Systems (HotCarbon), July 2023

### CarbonCast: Multi-day Forecasting of Grid Carbon Intensity [pdf]

BuildSys '22

**Diptyaroop Maji**, Prashant Shenoy, Ramesh K. Sitaraman

In the 9th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), November 2022

### Leveraging Programmable Dataplanes for a High Performance 5G User Plane Function [pdf]

APNet '21

Abhik Bose\*, **Diptyaroop Maji**\*, Prateek Agarwal, Nilesh Unhale, Rinku Shah, Mythili Vutukuru

In the 5th Asia-Pacific Workshop on Networking (APNet), June 2021

(\* denotes student authors with equal contribution)

## RESEARCH EXPERIENCE

---

### University of Massachusetts Amherst, USA

Graduate Research Assistant

Aug '21 – Present

**Project:** Computational Decarbonization of Societal Infrastructures at Mesoscales (NSF CoDec).

**Description:** Working on measuring, forecasting, optimizing, and reducing carbon emissions associated with electricity consumption associated with various domains ranging from data-center computing to residential electricity use.

### VMware Research, USA

Research Intern

May '22 – Aug '22

**Project:** Bringing carbon-awareness to the NSX Avi Global Load Balancer.

**Description:** Worked on extending the NSX Avi Global Load Balancer to be carbon-aware while making spatial load-balancing decisions.

**Mentor:** Ben Pfaff

### Indian Institute of Technology Bombay, India

Project Engineer

Jul '20 – Jun '21

**Project:** Development and optimization of high-performance User Plane Function (UPF) dataplane in 5G.

**Description:** Developed a high-performance DPDK-based UPF dataplane. Also worked on comparing strengths and weaknesses of different hardware and software-based UPF designs based on workloads.

## WORK EXPERIENCE

---

### Samsung Research Institute Bangalore, India

Senior Software Engineer

Mar '18 – Jun '18

Software Engineer

Jun '16 – Feb '18

**Project:** Feature development in and maintenance of Android Mobile Hotspot for flagship devices.

**Description:** Worked on feature development and product lifecycle management mainly in Android framework & UX layers, writing code that went into commercialization.

**Manager:** Farooq Hussain S

### Samsung Research Institute Bangalore, India

Student Trainee

May '15 – Jul '15

**Project:** Concurrent effective utilization of Wi-Fi frequency bands for data sharing in RSDB enabled devices.

**Description:** Developed a file-sharing application that uses both Hotspot & Wi-Fi of a device simultaneously to create two channels (2.4 & 5GHz) for fast file transfer between two devices.

**Mentor:** Farooq Hussain S

## TEACHING EXPERIENCE

---

### Indian Institute of Technology Bombay, India

Teaching Assistant

**CS 695:** Topics in Virtualization & Cloud Computing. (Instructor: Prof. Mythili Vutukuru)

Jan '20 – May '20

**CS 744:** Design and Engineering of Computing Systems. (Instructor: Prof. Umesh Bellur)

Sep '19 – Dec '19

**CS 224:** Computer Networks. (Instructor: Prof. Kameswari Chebrolu)

Jan '19 – May '19

**CS 305:** Computer Architecture. (Instructor: Prof. Bernard Menezes)

Sep '18 – Dec '18

## AWARDS AND HONORS

---

**Best Paper Runner-Up:** ACM e-Energy 2024.

Jun '24

**ACM SIGEnergy Student Travel Grant:** For ACM e-Energy 2024.

Jun '24

**Teaching Assistant of the Month:** For the Design and Engineering of Computing Systems course at IIT Bombay.

Sep '19

**All India Rank 42:** In Graduate Aptitude Test in Engineering (GATE) examination amongst 107893 candidates.

Feb '18

**First-Class with Honors:** In Bachelor of Engineering, Jadavpur University

May '16