Rajdeep Das — PhD Candidate CS@UCSD — Systems and Networking

CONTACT
INFORMATION

Computer Science and Engineering
UC San Diego

webpage: http://www.sysnet.ucsd.edu/~r4das
e-mail: das.rajdeep97@gmail.com

RESEARCH
INTERESTS

Programmable Networks, P4, Userspace networking, DPDK, Network Virtualization, User-Defined Networking, (Real-Time) Streaming, Networks and Distributed Systems

EDUCATION

PhD / Computer Science and Engineering
University of California San Diego   2017 - present

M.Tech / Computer Science and Engineering
Indian Institute of Technology Kanpur   2013 - 2015

B.Tech / Information Technology
West Bengal University of Technology   2009 - 2013

High School / Indian School Certificate
Council for the Indian School Certificate Examinations   2009

SUMMARY

As a PhD candidate in Computer Science and Engineering at UC San Diego, I am working on enabling user-defined network behavior using programmable switches and active networking, that can optimize performance, reliability, and security of cloud-hosted applications. My research has recently been published at SIGCOMM where it received the **best paper award**, and at Hotnets'20. This research has also be supported by a hardware grant from **Intel Fast Forward Initiative 2022**.

Through my academic and professional career, I have worked in several dimensions of computer systems and networking - including real-time streaming, software defined networking, and P4 - and contributed to several research projects and publications in this domain. Previously, I was a research fellow at Microsoft Research India, where I addressed performance deficiencies in real-time streaming applications, and have contributed to projects published at two major conferences respectively. I also have a master's degree in computer science from IIT Kanpur, where I won the **best software award** for building Prutor, an intelligent tutoring system for programming.

I am passionate about advancing the state of the art in networked systems. My goal is to complete my PhD and pursue a career in academia or industry, where I can continue to innovate and collaborate with other researchers and practitioners in this field.

SELECTED
PUBLICATIONS

Rajdeep Das and Alex C. Snoeren. "Memory Management in ActiveRMT: Towards Runtime-programmable Switches". ACM SIGCOMM, 2023 (**Best Paper**)

Rajdeep Das and Alex C. Snoeren. "Enabling Active Networking on RMT Hardware". ACM Hotnets, 2020

William M. Mellette, Rajdeep Das, Yibo Guo, Rob McGuinness, Alex C. Snoeren, George Porter. "Expanding across time to deliver bandwidth efficiency and low latency". Usenix NSDI, 2020

Arjun Roy, Rajdeep Das, Hongyi Zeng, Jasmeet Bagga, Alex C. Snoeren. "Understanding the Limits of Passive Realtime Datacenter Fault Detection and Localization". IEEE/ACM Transactions on

Networking, 2020

Rajdeep Das, Nimantha Baranasuriya, Venkat Padmanabhan, Christoffer Rodbro, Seth Gilbert. "Informed Bandwidth Adaptation in Wi-Fi Networks using Ping-Pair". ACM CoNext, 2017

Junchen Jiang, Rajdeep Das, Ganesh Ananthanarayanan, Philip A. Chou, Venkata Padmanabhan, Vyas Sekar, Esbjorn Dominique, Marcin Goliszewski, Dalibor Kukoleca, Renat Vafin, Hui Zhang. "VIA: Improving Internet Telephony Call Quality Using Predictive Relay Selection". ACM SIGCOMM, 2016

PATENTS

Philip Andrew Chou, Venkata N Padmanabhan, Rajdeep Das, Ganesh Ananthanarayanan, Junchen Jiang. "Data-driven network path selection". US Patent App. 15/169,429, 2017

AWARDS & ACHIEVEMENTS

Best Paper Award 2023
ACM SIGCOMM 2023

Best Software Award 2015
Indian Institute of Technology Kanpur

ACADEMIC SERVICES

Journal article review, IEEE/ACM Transactions on Networking, 2021

Artifact evaluation, ACM SIGCOMM, 2022

PROFESSIONAL EXPERIENCE

Microsoft Research India / Research Fellow   Bangalore (India), August 2015 - August 2017
Mobility, Networks and Systems Research Group

Via - Research focused on mapping the network performance between a cluster of network endpoints (autonomous systems) using data collected from Skype calls. This was then used to predict the quality of future calls and/or alternative paths that could lead to better call quality. Ran simulations over historical calls and built a real-world prototype. Also built a web-based interactive 3D visualization tool for analyzing data.

Kwikr - Research focused on improving bandwidth adaptation for real-time streaming applications (such as Skype) over Wi-Fi networks. Built and evaluated detectors for congestion, handoffs and link-strength-change at the WiFi access point. Integrated Kwikr into Skype for Android consumer production clients which we used to evaluate our approach on millions of Skype consumers. This project received the **Best Corporate Demo** Award at COMSNETS 2017.

Multipath in Real-Time Streaming - Research focused on evaluating the benefits of using multipath in real-time streaming applications. Built a WebRTC based experimental tool which was used to collect data from users geographically spread out over multiple countries. Analyzed data to investigate the cause of call drops. Instrumented tool to analyze potential benefits of using multipath over the WAN.

PriceWaterhouseCoopers / Intern   Kolkata (India), June 2012 - August 2012
Primary responsibility included assessing live web applications for security vulnerabilities and recommending corresponding fixes. Tested for vulnerabilities from the OWASP list such as cross-site-scripting, injection, session hijacking, sensitive data leakage, cross-site-request-forgery, insecure direct object references and unvalidated forwards/redirects.

Master's Thesis **A Tutoring System for Introductory Programming**
Built a software system, Prutor, for teaching introductory programming, that enables semantic feedback generation while programming. Prutor can trace the evolution of student programs to aid in understanding of the student's approach while solving a programming problem. From a pedagogical point of view, Prutor helps tutors/TAs in assisting students in problem solving. Data collected using Prutor has been used to develop a number of tools which aid in computer science education and has also led to publications in major conferences. Prutor is now extensively used for teaching introductory programming at various universities such as IITs and IISC. This project received the **Best Software Award** at IIT Kanpur.

Student
Competitions

Google Dev Fest / Runner Up   September 2013
WishEmAll: Built a Facebook app that automates sending birthday greetings to users' friends.

Yahoo! Hack U / Honourable Mention   August 2013
Gyaanometer: Built a user rating system for Yahoo answers, where every user would be given a knowledge-reliability rating based on heuristics related to her past activity. Our hack was ranked in the top 7 hacks.

Microsoft Code.Fun.Do / Participated   January 2013
Botomatic: Built a Facebook app which could chat on behalf of an authorized user using a third-party AI interface (Pandorabots).