Sharat Chandra Madanapalli

✉ sharat910@gmail.com
🖸 LinkedIn Profile
Google Scholar Profile

Education

2018–2022	**University of New South Wales (UNSW) Sydney**, *Doctor of Philosophy (Ph.D.)*, Programmable Networks and Machine Learning.
2014–2018	**Birla Institute of Technology and Science (BITS) Pilani**, *Bachelor of Engineering (Hons.)*, Computer Science, GPA – 9.4/10.
2012–2014	**FIITJEE Junior College**, *Mathematics, Physics and Chemistry*, Score – 97.1%.

Experience

Apr 2022 – Ongoing — **Head of Data Science**, Canopus Networks.
- Manage a team of data scientists and analysts to develop data-driven products for monitoring mobile and broadband networks around the world.
- Execute projects and trials for customers including operators like Telstra, Optus, and NBN in Australia and Reliance Jio and Vodafone-Idea in India.
- Well versed in software and big data architectures to design and build products that work at terabit-scale.

Oct 2019 – Apr 2022 — **Part-time Software Engineer: Data and ML**, Canopus Networks.
- Developed network functions to extract sophisticated telemetry to support QoE measurements
- Designed and implemented machine learning models to classify internet traffic
- Involved in the internet QoE and ML product lifecycle from prototype development, testing and deployment.

Nov 2019 – Jun 2020 — **Collaborating Researcher**, Telstra.
Analyzed network traffic datasets of Telstra 4G deployment to assess the feasibility of generating QoE metrics for 4k video streams. Work included setting up a lab environment with 4G modems, creating network interference and procuring and analysing datasets.

Feb–May 2020 — **Academic Guest**, ETH Zurich.
Leveraged programmable data planes and packet scheduling algorithms to build a data-driven self driving network to improve Internet application performance that can be deployed in ISP networks.

Sep 2018 – Mar 2019 — **Collaborating Researcher**, Cisco.
Built a system to model and monitor encrypted carrier wifi-calling sessions in enterprise networks using time-series machine learning. The system secured the enterprise by blocking malicious traffic other than wifi-calls.

May 2017 – Dec 2017 — **Research Practicum Intern**, UNSW Sydney.
Scaled-up a video stream monitoring solution 100x to support traffic rates of 10Gbps by developing distributed SDN applications and packet processors using DPDK.

Patents

Nov 2021 — **Network Traffic Classification**, Filing Number: 2021903718, Sharat Chandra Madanapalli, Vijay Sivaraman, Himal Kumar.

Sep 2020 — **Apparatus and process for detecting and estimating user experience of online games**, PCT/AU2020/050935, Sharat Chandra Madanapalli, Hassan Habibi Gharakheili, Vijay Sivaraman.

May 2020 — **Process and Apparatus for Estimating Real-Time Quality of Experience**, PCT National Phase Australia: 2020274322, Sharat Chandra Madanapalli, Hassan Habibi Gharakheili, Vijay Sivaraman.

Feb 2020 — **Network Bandwidth Apportioning**, PCT National Phase Australia: 2020228672, Vijay Sivaraman, Sharat Chandra Madanapalli, Hassan Habibi Gharakheili, Himal Kumar.

Achievements

2019-21 — **World-wide research travel grants**, *as a PhD Student*, UNSW Sydney.
Received several travel grants to present my research around the world in top networking and AI conferences.

May 2020	**Invited Data Science Talk**, Telstra Data Science Interest Group.
	Presented the latest data science tools and techniques used in the 4G project to analyze complex datasets.
Nov 2019	**Invited P4 Workshop Instructor**, Telstra Next Generation Networking Summit.
	Instructed network engineers on building modern networked systems using P4-programmable data planes.
Sep 2019	**Invited Research Speaker**, Australian Network Operators Group (AUSNOG) Summit.
	Presented my work in gaming detection and latency measurements to network operators across Australia.
Jun 2019	**Best Dataset Award**, TMA Conference.
	Received the award for curating Netflix streaming datasets collected over 3months across 9 home networks.
July 2018	**Recipient of UNSW Tution Fee Scholarship (TFS)**, UNSW Sydney.
	Received the competitive TFS scholarship to pursue my Ph.D.
May 2018	**High Distinction With Honours in Computer Science**, BITS Pilani.
	In top 2% of the computer science class in first-ranked private engineering university in India.
Mar 2018	**Exxon Mobil Signage Detection Competition**, BITS Pilani.
	Winning proposal to detect signage using modern neural networks and object recognition algorithms.
Feb 2016	**Finalist in Build the Shield Cybersecurity Challenge**, Microsoft.
	Ranked 15 among top 50 teams in India solving cyber security puzzles (hacks/exploits etc.) using programming.
Feb 2014	**National Science Talent Search Exam (NSTSE)**, Unified Council India.
	All India Rank 51 amongst 1000s of students across schools in India

Publications

May 2022	**AutoQoS: Automatic, Application-aware QoS Configurations**,
	Sharat Chandra Madanapalli, Hassan Habibi Gharakheili, Laurent Vanbever, Arxiv.
Mar 2022	**Know Thy Lag: In-network Gameplay Detection and Latency Measurements**,
	Sharat Chandra Madanapalli, Hassan Habibi Gharakheili, Vijay Sivaraman,
	Passive and Active Measurements (PAM) 2022.
Dec 2021	**FlowFormers: Transformer-based Models for Real-time Network Flow Classification**,
	Sharat Chandra Madanapalli, Rushi Babariya, Himal Kumar, Vijay Sivaraman,
	Mobility, Sensing and Networking (MSN) 2021.
Sep 2021	**Measuring Network Experience Meaningfully, Accurately, and Scalably**,
	Vijay Sivaraman, Sharat Chandra Madanapalli, Himal Kumar,
	Measuring Network Quality for End-Users, IAB.
Jun 2021	**ReCLive: Real-Time Classification and QoE Inference of Live Video Streaming Services**,
	Sharat Chandra Madanapalli, Alex Mathai, Hassan Habibi Gharakheili, Vijay Sivaraman,
	International Symposium on Quality of Service (IWQOS) 2021.
Feb 2021	**Software-Defined Multi-domain Tactical Networks: Foundations and Future Directions**,
	Redowan Mahmud, Adel N Toosi, Maria Alejandra Rodriguez, Sharat Chandra Madanapalli, Vijay Sivaraman, Len Sciacca, Christos Sioutis, Rajkumar Buyya, Mobile Edge Computing 2021.
Oct 2019	**Modeling and Monitoring Wi-Fi Calling Traffic in Enterprise Networks Using Machine Learning**,
	Sharat Chandra Madanapalli, Arunan Sivanathan, Hassan Habibi Gharakheili, Vijay Sivaraman, Santosh Patil, Byju Pularikkal, Local Computer Networks (LCN) 2019.
Aug 2019	**Assisting Delay and Bandwidth-sensitive Applications in a Self-Driving Network**,
	Sharat Chandra Madanapalli, Hassan Habibi Gharakheili, Vijay Sivaraman,
	SIGCOMM Workshop on Network Meets AI & ML (NetAI) 2019.
Jun 2019	**Inferring Netflix User Experience from Broadband Network Measurement**,
	Sharat Chandra Madanapalli, Hassan Habibi Gharakheili, Vijay Sivaraman,
	Network Traffic Measurement and Analysis Conference (TMA) 2019.
Apr 2019	**OpenTD: Open Traffic Differentiation in a Post-neutral World**,
	Vijay Sivaraman, Sharat Chandra Madanapalli, Himal Kumar, Hassan Habibi Gharakheili,
	ACM Symposium on SDN Research (SOSR) 2019.

Apr 2018   **Real-time detection, isolation and monitoring of elephant flows using commodity SDN system**,
Sharat Chandra Madanapalli, Minzhao Lyu, Himal Kumar, Hassan Habibi Gharakheili, Vijay Sivaraman,
IEEE/IFIP Network Operations and Management Symposium (NOMS) 2018.

Skills

Areas	Programmable Networks, SDN/NFV, Data Science, Machine Learning
Programming	Python, Golang, P4, Java, C/C++, SQL
Frameworks	Pandas, Plotly, Keras, Tensorflow
WebDev	HTML/CSS, JavaScript
Utilities	Git, Docker, Jupyter Notebook
Languages	English, Hindi, Telugu
Music	Guitarist, Keyboardist and Vocalist

References

Vijay Sivaraman,
Professor,
School of EET, UNSW Sydney,
vijay@unsw.edu.au.

Hassan Habibi Gharakheili,
Senior Lecturer,
School of EET, UNSW Sydney,
h.habibi@unsw.edu.au.

Himal Kumar,
CTO,
Canopus Networks,
himal@canopusnet.com.

Behnam Hashemitabar,
Senior Data Scientist,
AI insights and Automation Configuration,
Telstra Corporation,
behnam.hashemitabar@team.telstra.com.