

UFUK USUBUTUN

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SUMMARY

My PhD focuses on the cross-layer analysis and modeling of networking protocols and systems. I have extensive experience interpreting standards in different realms (e.g. IETF, 3GPP, Open-RAN, Ultra Ethernet) and protocol implementations (e.g. Linux TCP). I conduct my experiments on networking testbeds (e.g. Cloudlab, Fabric) and I am experienced with Markov modeling techniques. I also have some experience optimizing routing algorithms.

EDUCATION

New York University Tandon School of Engineering, Brooklyn NY PhD in Electrical Engineering - Supervisor: Prof. Shivendra Panwar	<i>September 2020 - ongoing</i> CGPA: 3.81
Bilkent University, Ankara TR B.Sc. in Electrical and Electronics Engineering Minor Degree in Political Science	<i>August 2015 - January 2020</i> CGPA: 3.76 CGPA: 3.73
AGH University of Science and Techology, Cracow PL Exchange Student in Electrical Engineering	<i>February 2018 - July 2018</i>

EXPERIENCE

Marvell Semiconductor, Santa Clara CA USA <i>Switch Architect Engineer Intern</i>	June - August 2024
Worked on the Ultra Ethernet standards being developed for Data Center Networks. Conducted simulations with proposed UET transport algorithms. Built Markov models to guide the Teralynx switch architecture design.	
AT&T Labs, Bedminster NJ USA <i>Summer Research Intern</i>	June - August 2023
Worked on modeling 5G Radio Resource Control layer and adjusting states transitions by tuning inactivity timers to optimize for KPIs, with potential benefits for RAN optimization and Open-RAN implementations.	
Nokia Bell Labs, Murray Hill NJ USA <i>Networking Research Intern</i>	June - August 2022
Worked on efficiently solving traffic oblivious flow routing problems using machine learning methods with Murali Kodialam and Tv Lakshman of Bell Labs Core Research. (See publications & awards.)	
NYU Tandon School of Engineering, Brooklyn NY USA <i>Course Assistant</i>	Sept 2021 - ongoing
Teaching, grading, assignment preparation and administrative duties on graduate Internet Architectures & Protocols, Network Modeling & Analysis and Network Security Classes taught by Prof. Shivendra Panwar.	
Darkblue Telecommunication Systems, Ankara TR <i>Project Engineer</i>	February - August 2020
Worked on positioning UAVs by tracking time shifts in Channel Reference Signals of multiple LTE base stations and processing them with an Extended Kalman Filter model. Collected samples using USRPs and implemented a proof of concept on MATLAB.	
Fraunhofer Institute for Integrated Circuits, Erlangen DE <i>Undergraduate Research Intern</i>	June - September 2019
Development of an OFDM based physical layer cooperative telecommunications simulator on Python for evaluation of proposed relaying schemes while using cyclic delay diversity at the transmitting antennas.	

PUBLICATIONS

- Designing Reliable Virtualized Radio Access Networks** IEEE Globecom 2024
Ufuk Usubutun, Andre Gomes, Shankarayanan P. Narayanan, Matti Hiltunen, Shivendra Panwar
- Oblivious Routing Using Learning Methods** IEEE Globecom 2023
Ufuk Usubutun, Murali Kodialam, T.V. Lakshman, Shivendra Panwar
- Do Switches Still Need to Deliver Packets in Sequence?** IEEE HPSR 2023
Ufuk Usubutun, Fraida Fund, Shivendra Panwar **Best Paper Award**

SKILLS

- Experience With** **Standards:** IETF RFCs, 3GPP, Open-RAN, Ultra Ethernet Transport
Networking Testbeds and Experimentation: Analysis of Packet Captures
System Modeling: Queuing Theory, Markov Chains, TCP Congestion Control Flavors and Loss Detection Algorithms
Network Optimization Theory
- Related Course Work** Internet Architecture & Protocols, Network Modeling & Analysis, Probability, Cloud Computing & DCNs, Data Structures & Algorithms, Optimization, Wireless Comms., Machine Learning, AI/ML for Networking
Reinforcement Learning & Optimal Control, Network Optimization
- Programming Experience** *bash* scripting for large scale network experiments, linux kernel patching
Python, Matlab implementations of routing optimization, Markov Chains
pandas analysis of network experimental data, packet captures, Matlab LTE, 5G and Control System Toolbox experience, Java and Python OOP experience

ONGOING PROJECTS

On Packet Reordering and TCP Resilience to Packet Reordering

I am working on (i) obtaining analytical bounds for tolerability of packet reordering under time-based loss detection methods, (ii) testing TCP tolerance to packet reordering under wireless and multipath scenarios.

On 5G Dual Connectivity Activation

With AT&T Labs, we are working on developing an analytical model for optimizing Dual-Connectivity activation/deactivation decisions.

AWARDS AND RECOGNITIONS

- 2024 - The Dante Youla Award for Graduate Research Excellence** NYU Tandon ECE Dept.
- 2023 - Best Paper Award** IEEE HPSR 2023 Co-Chairs
- 2022 - Outstanding Innovation Award** Nokia Global Student Program

ACADEMIC ACHIEVEMENTS

Scored in the top 0.25% in the Turkey-wide University Entrance Exam with around 2 Million exam takers.
Awarded Academic Excellence Scholarships waiving tuition of undergraduate studies.
School of Engineering Fellow at NYU Tandon. Covers tuition, health insurance and stipend through PhD.

LANGUAGES

Turkish: Native
English: Fluent
French: Proficient

TOEFL Score: 109/120
Delf B2 Certificate

VOLUNTARY ACTIVITIES

Mentorship to High School Students within NYU Tandon ARISE High School Research Program.

Co-leading of high school FRC robotics team Anatolian Eaglebots 3390. Gave basic coding and electronics trainings for high school students and took part in design and strategy decisions for the team.

Executive Board Membership of Sociology Club for 2.5 years at Bilkent University. Organized conferences, discussion sessions and guided city walks with academics.

Participant and Executive Board Member of Theatre and Improvisation Club for 4 years at Bilkent University. Acted in plays and improvisations. Directed an planned numerous improvisation sessions.

PERSONAL TRAITS

Passionate about history, foreign languages and jazz.