

# UFUK USUBUTUN

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## EDUCATION

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**New York University Tandon School of Engineering, Brooklyn NY**

*September 2020 - ongoing*

PhD in Electrical Engineering - Supervisor: Prof. Shivendra Panwar

CGPA: 3.86

**Bilkent University, Ankara TR**

*August 2015 - January 2020*

B.Sc. in Electrical and Electronics Engineering

CGPA: 3.76

Minor Degree in Political Science

CGPA: 3.73

**AGH University of Science and Techology, Cracow PL**

*February 2018 - July 2018*

Exchange Student in Electrical Engineering

## EXPERIENCE

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**AT&T Labs, Bedminster NJ USA**

June - August 2023

*Summer Research Intern*

Worked on modeling 5G Radio Resource Control layer and optimizing states transitions by tuning inactivity timers for optimizing KPIs, with potential benefits for RAN optimization and Open-RAN implementations.

**Nokia Bell Labs, Murray Hill NJ USA**

June - August 2022

*Networking Research Intern*

Worked on efficiently solving traffic oblivious flow routing problems using machine learning methods with Murali Kodialam and Tv Lakshman of Bell Labs Core Research. Received *Outstanding Innovation Award* at the end of intern project competition. (See publications.)

**NYU Tandon School of Engineering, Brooklyn NY USA**

Sept 2021 - ongoing

*Course Assistant*

Teaching, grading, assignment preparation and administrative duties on graduate Internet Architectures & Protocols and Network Modeling & Analysis Classes taught by Prof. Shivendra Panwar and on undergraduate Computer Engineering Senior Desing Project Class taught by Prof. Fraida Fund.

**Darkblue Telecommunication Systems, Ankara TR**

February - August 2020

*Project Engineer*

Development and implementation work at the LTE leg of a Signals of Opportunity Navigation Project developed for UAVs. Initial proof of concept work consisted of simultaneous tracking of multiple LTE base stations using Channel Reference Signals and location estimation using an Extended Kalman Filter. Upon success, a real-time implementation was built on a Xilinx SoC.

**Fraunhofer Institute for Integrated Circuits, Erlangen DE**

June - September 2019

*Undergraduate Research Intern*

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

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**Oblivious Routing Using Learning Methods**

*Ufuk Usubutun, Murali Kodialam, T.V. Lakshman, Shivendra Panwar*

To appear at IEEE Global Communications Conference 2023

**Do Switches Still Need to Deliver Packets in Sequence?**

**Best Paper Award**

*Ufuk Usubutun, Fraida Fund, Shivendra Panwar*

IEEE High Performance Switching and Routing Conference 2023

## SKILLS

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<b>Related Course Work</b>	Internet Arch. & Protocols, Network Modeling & Analysis, Cloud Computing & DCNs, Data Structures & Algorithms, Optimization, Wireless Comms., Machine Learning, Reinforcement Learning & Optimal Control
<b>Experience With</b>	TCP Loss Detection Algorithms: particularly RFCs 8985 & 6675, GENI and Cloudlab Network Testbeds, Analysis of Packet Captures Queuing Theory and Markov Chain Modelling, Routing Optimization Problem Formulation and Descent Based Solutions Resiliency Modeling, Machine Repair Problems 3GPP Cellular Protocol Stack, RRC Layer Protocols and Procedures
<b>Programming Experience</b>	<i>bash</i> scripting for large scale network experiments, linux kernel patching <i>pytorch</i> implementation of constrained routing optimization problems, <i>pandas</i> analysis of experimental data, Matlab LTE, 5G and Control System Toolbox experience, Java and Python OOP experience

## ONGOING PROJECTS

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### On Packet Reordering and Time Based Loss Detection

Using our conclusions from HPSR 23', we are interested in (i) obtaining analytical bounds for tolerability of packet reordering under time based methods, (ii) discovering cases of wireless communications and multipath.

### On 5G Radio Resource Control Layer State Space

In Continuation of my summer internship work at AT&T Labs, I working to model and optimize the 5G RRC State Space.

### On Virtual Radio Access Network (vRAN) Resilience

As a second project at AT&T Labs, I am interested in application of Machine Repair Problems, onto vRAN Resilience Problems.

### On Oblivious Routing

Using our method from Globecom 23', we are interested in (i) obtaining different ways of solving this problem, (ii) applying this idea to disaster recovery resource provisioning problems under limited network knowledge.

## ACADEMIC ACHIEVEMENTS

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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

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**Turkish:** Native

**English:** Fluent

**French:** Proficient

*TOEFL Score: 109/120*

*Delf B2 Certificate*

## VOLUNTARY ACTIVITIES

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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

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Passionate about history, foreign languages and jazz.