Caglar Tunc — Curriculum Vitae

Contact Information

1 AT&T Way,
Bedminster, NJ 07921

E-mail: ct777p@att.com
Personal Website: www.caglartunc.com

Research Interests

Stochastic design and analysis of 5G networks, mmWave communications for vehicular networks, applications of machine learning on 5G-NR and LTE-Advanced.

Education

NYU Tandon School of Engineering, New York, NY, U

PhD., Electrical and Computer Engineering, September 2016 - February 2022

- **CGPA:** 3.95/4.00
- **Advisor:** Prof. Dr. Shivendra Panwar
- **Dissertation title:** *"Mitigating the Challenges of Low-Latency Services in Future Wireless Networks"*
- Ernst Weber Fellowship, Ph.D.
- **Related Courses Taken:** Wireless Communications, Massive MIMO, Advanced Machine Learning, Convex/Nonsmooth Optimization, Information Theory, Advanced Signal Processing, Queuing Theory

Bilkent University, Ankara, Turkey

M.S., Electrical and Electronics Engineering, September 2013 - June 2016

- **CGPA:** 3.84/4.00
- **Advisor:** Prof. Dr. Nail Akar
- **Thesis title:** *"Energy Management in Energy Harvesting Wireless Sensor Nodes With Lifetime Constraints"*
- TUBITAK Graduate Scholarship

B.S., Electrical and Electronics Engineering, August 2009 - June 2013

- **CGPA:** 3.77/4.00
- Comprehensive Scholarship by Placement Examination (OYS)

Ankara Ataturk Anatolian High School, Ankara, Turkey September 2005 - June 2009

Professional Experience

AT&T Labs Research, Middletown, NJ, USA

Senior Inventive Scientist March 2022 - Present

- Research and development of future wireless technologies

NYU Wireless, NYU Tandon School of Engineering, New York, NY, USA

Teaching/Research Assistant September 2016 - February 2022

Samsung Research America, Berkeley Heights, NJ, USA

Intern, Standard and Mobility Innovation (SMI) May 2020 - August 2020

- Electric and magnetic fields (EMF)-based power control for Massive MIMO

Futurewei Technologies, Bridgewater, NJ, USA

Systems Engineering Intern May 2019 - August 2019

- Data/statistical analysis and machine learning-based prediction/performance improvement of link adaptation in 5G-NR

Systems Engineering Intern May 2018 - August 2018

- Optimizing link adaptation in 5G-NR using machine learning techniques

Systems Engineering Intern May 2017 - August 2017

- Carrier aggregation in LTE-Advanced

Bilkent University, Ankara, Turkey

Research Assistant, Graduate Teaching Assistant Fall 2013 - Spring 2016

ASELSAN, Ankara, Turkey

Part-Time System Engineer December 2012 - June 2013

- Design of Wireless Communication Devices and Networks for Police and Gendarmerie

Journal Publications

- **C. Tunc** and S. Panwar. "Mitigating the Impact of Blockages in Millimeter-Wave Vehicular Networks through Vehicular Relays", *IEEE Open Journal of Intelligent Transportation Systems*, July 2021.
- **C. Tunc**, MF. Özkoç, F. Fund and S. Panwar. "The Blind Side: Latency Challenges in Millimeter Wave Networks for Connected Vehicle Applications", *IEEE Transactions on Vehicular Technology*, December 2020.
- E. O. Gamgam, **C. Tunc** and N. Akar. "On the Queuing Model of the Energy-Delay Trade-Off in Wireless Links with Power Control and Link Adaptation", *IEEE Transactions on Communications*, February 2019.
- N. Akar, **C. Tunc**, M. A. Gaertner and F. Erden. "Performance of Shortest Cumulative Access Time First (SCATF) Disk Scheduling Algorithms", *The Turkish Journal of Electrical Engineering & Computer Sciences*, July 2017.
- **C. Tunc** and N. Akar. "Markov Fluid Queue Model of an Energy Harvesting IoT Device with Adaptive Sensing", *Performance Evaluation*, May 2017.
- **C. Tunc** and N. Akar. "Fixed-point Analysis of a Network of Routers with Persistent UDP and TCP Flows and Class-based Weighted Fair Queuing" *Telecommunication Systems*, July 2016.
- **C. Tunc** and N. Akar. "Mapping Time-varying IP Traffic to Flexible Optical Paths in Flexgrid Optical Networks" *Photonic Network Communications*, August 2014.

Patents

- Z. Lin, S. Das, **C. Tunc** and J. Zhang. "Apparatus and method for managing the exposure to electric and magnetic fields (EMF)", US11064443B1, July 2021.

Conference Publications

- **C. Tunc** and S. Panwar. "Analysis of Outage Probability and Duration in Millimeter Wave Vehicle-to-Infrastructure Networks", *IEEE 92nd Vehicular Technology Conference: VTC2020-Fall*, Victoria, BC Canada.
- **C. Tunc** and S. Panwar. "Optimal Transmission Policies for Energy Harvesting Age of Information Systems with Battery Recovery", *2019 Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, USA.
- **C. Tunc**, MF. Özkoç and S. Panwar. "Millimeter Wave Coverage and Blockage Duration Analysis for Vehicular Communications", *IEEE 90th Vehicular Technology Conference: VTC2019-Fall*, Honolulu, Hawaii, USA.
- **C. Tunc** and N. Akar. "Efficient Transport of Time-varying IP Traffic in Flexi-grid Optical Networks", *Signal Processing and Communications Applications Conference (SIU)*, Trabzon, Turkey, April 2014.

Working Papers

- MF. Özkoç, **C. Tunc** and S. Panwar. "Data-Driven Beamforming Codebook Design to Improve Coverage in Millimeter Wave Networks", submitted to *IEEE 95th Vehicular Technology Conference: VTC2022-Spring*.
- **C. Tunc**, MF. Özkoç and S. Panwar. "Uplink Channel-based Smart Handover for Delay Minimization in 5G-Supported Cloud Applications", in progress.

Presentations

C. Tunc and N. Akar. "Performance Modeling of Delay-based Dynamic Speed Scaling", *The Ninth International Conference on Matrix-Analytic Methods in Stochastic Models (MAM9)*, Budapest, Hungary, June 2016.

Thesis

C. Tunc. "Energy Management in Energy Harvesting Wireless Sensor Nodes with Lifetime Constraints." *MS Thesis*, Bilkent University, June 2016.

Languages

English: Fluent, **Spanish**: Moderate, **German**: Beginner, **Turkish**: Native

Comp. Skills

Matlab/CVX/Gurobi, Python, Torch, TensorFlow, VHDL, Java, R, AMPL, Assembly.

Awards & Achievements

- Ernst Weber Fellowship (PhD), NYU Tandon School of Engineering
- TUBITAK Graduate Scholarship
- Bilkent University Master of Science Study Full Scholarship
- Bilkent University High Honor Student (2009-2010 Fall, 2009-2010 Spring, 2010-2011 Fall, 2010-2011 Spring, 2011-2012 Fall, 2012-2013 Fall, 2012-2013 Spring)
- Bilkent University Honor Student (20011-2012 Spring)
- TUSIAD's 'Bu Gençlikte İş Var' Honourable Mention Award
- Ranked 420th in University Entrance Exam among 1.4 million candidates