

# Furkan Bagci

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## Education

<b>University of Illinois Chicago, Chicago, IL, USA</b> Ph.D. Student, Electrical and Computer Engineering	<i>August 2025 – Present</i>
<b>Bilkent University, Ankara, Turkey</b> <i>M.Sc. in Electrical and Electronics Engineering</i> Thesis Title: <i>On Over-The-Air Federated Learning Over Wireless Channels With Energy Harvesting and Heterogeneous Data Distribution</i> <a href="#">[Link]</a>	<i>August 2022 – August 2025</i>
<b>Bilkent University, Ankara, Turkey</b> <i>B.Sc. in Electrical and Electronics Engineering</i>	<i>September 2017 – June 2022</i>

## Research Interests

Machine Learning for Wireless Communications, Interpretability, Federated Learning, Learning-Based MIMO Precoding, Error-Correcting Codes, Machine Learning, Wireless Communications

## Research Experience

<b>Graduate Researcher</b> <i>UIC</i>	<i>August 2025 – Present</i>
○ Working under the supervision of <a href="#">Prof. Natasha Devroye</a> . ○ Working on learning-based MIMO precoding design and interpretability. ○ Working on transformer-based error-correcting code decoders.	

  

<b>Graduate Researcher</b> <i>CTAR Lab, Bilkent University</i>	<i>August 2022 – August 2025</i>
○ Worked under the supervision of <a href="#">Prof. Tolga Mete Duman</a> . ○ Developed diverse client scheduling strategies for over-the-air federated learning with energy-harvesting devices over wireless fading MACs, analyzing update estimation and user clustering. ○ Proposed a personalized clustered federated learning framework enabling simultaneous multi-model over-the-air aggregation via a single parameter server with CSI-aware combining under blind transmitters.	

## Relevant Courses

Bilkent University – <i>M.Sc.</i>	Wireless Communications, Random Processes, Information Theory, Advanced Signal Processing, Detection and Estimation Theory
Bilkent University – <i>B.Sc.</i>	Telecommunications I, Telecommunications II, Coding Theory, Digital Signal Processing, Neural Networks, Introduction to Machine Learning, Statistical Learning and Data Analytics

## Publications

**Cluster-Aware Scheduling and Model Personalization in Over-the-Air Federated Learning with Energy Constraints**

**F. Bagci**, B. Tegin, M. Kazemi, and T. M. Duman  
(*under review, 2025*)

**Update Estimation and Scheduling for Over-the-Air Federated Learning with Energy Harvesting Devices**

**F. Bagci**, B. Tegin, M. Kazemi, and T. M. Duman  
*2025 IEEE International Conference on Communications Workshops (ICC Workshops)* [\[Link\]](#)

## **Relative Localization for Swarm Aerial Vehicles**

A. Aytekin, **F. Bağcı**, M. Bozdağ, N. Camuzcu, A. Duru, M. S. Elma, A. Maghsoudi, B. Barshan, S. Köse, and Ç. Akman

2022 30th Signal Processing and Communications Applications Conference (SIU) [\[Link\]](#)

## **Experience**

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### **Teaching Assistant**

*University of Illinois Chicago, Chicago, IL, USA*

- Teaching Assistant for ECE 333 and ECE 225

*August 2025 – Present*

### **Teaching Assistant**

*Bilkent University, Ankara, Turkey*

- Coordinator Teaching Assistant for EEE 493/494 Industrial Design Project

*August 2022 – August 2025*

### **R&D Assistant Specialist**

*Turk Telekom Inc., Ankara, Turkey*

- Working on machine learning for next-generation wireless systems.

*August 2022 – August 2025*

### **Artificial Intelligence Intern**

*Baykar Technology, Istanbul, Turkey*

- Worked on monocular visual odometry for vehicles and UAVs. Implemented feature detection, feature description, and optical flow algorithms for motion estimation.

*June 2021 – August 2021*

### **Undergraduate Teaching Assistant**

*Bilkent University, Ankara, Turkey*

- Student Teaching Asistant for EEE212 Microprocessors

*January 2021 – June 2021*

### **Digital and Embedded Systems Intern**

*ASELSAN, Ankara, Turkey*

- Worked on test systems and embedded systems. Implemented serial communication channel between FPGA board and the computer using AXI4-Lite, UART, I2C and RS232-RS422.

*July 2020 – August 2020*

### **Digital Design Intern**

*STM, Ankara, Turkey*

- Worked on the improvement of some major UAVs. Implemented AXI4-Lite 3 Phase PWM Generator on Xilinx Zynq-7000 FPGA board

*June 2019 – July 2019*

## **Achievements & Scholarships**

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### Achievements

- **Best Oral Presentation Award**, Bilkent University EEE Graduate Research Conference, 2025.
- Ranked in the top 0.4% among over 2 million students in the National University Entrance Exam, 2017.

### Scholarships

- 5G and Beyond Joint Graduate Support Programme Scholarship, Turk Telekom Inc., November 2022 – Present.

## **Technical Skills**

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<i>Programming Languages</i>	Python, MATLAB, Assembly, VHDL
<i>Frameworks</i>	PyTorch, Numpy, OpenCV

## **Languages**

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<i>English</i>	TOEFL: 106
<i>Turkish</i>	Native
<i>German</i>	Basic Proficiency

## **Extra-curricular Activities**

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### **Swimmer**

- Gained 40+ medals in national and regional tournaments as leading many teams as a captain and valuable team member.