

KUBILAY ULGER

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Summary: PhD student in Electrical Engineering working on foundations of task-oriented multiterminal compression with an interest in wireless communications, statistics, data science.

EDUCATION

New York University Tandon School of Engineering

Brooklyn, NY

PhD in Electrical Engineering

September 2020 - Present

Advisor : Prof. Elza Erkip

Research Interests: Semantic Source Coding, Information Theory, Wireless Communications, Physical Layer Security, Statistics

Relevant Coursework: Information Theory, Wireless Communications, Linear System Approach to Wave Propagation, Detection and Estimation Theory, Mathematical Statistics, Machine Learning, Deep Learning, Digital Signal Processing, Probability and Stochastic Processes, Data Structures and Algorithms, Algorithmic Machine Learning and Data Science.

GPA : 4.00/4.00

Bogazici University

Istanbul, Turkey

B.S. in Electrical & Electronics Engineering

September 2014 - June 2020

B.S. in Physics (Double Major)

Relevant Coursework: Statistical Signal Processing, Digital Communications, Image Processing

GPA : 3.83/4.00

Ranked 6th in National University Admission Exam (2 million participants)

RESEARCH & WORK EXPERIENCE

Research Assistant at NYU Wireless

Brooklyn, NY

Advisor: Prof. Elza Erkip

September 2020 - Present

- Working on Task-Oriented Multi-Terminal Source Coding problems (with Prof. Elza Erkip).
- Studied single-shot bounds for a Source Coding problem with multiple objectives. (with Prof. Elza Erkip, published).
- One-shot characterization for compression with side information of uniform sources (with Prof. Elza Erkip, accepted at ISIT 2024).
- Robust Multiterminal Neural Compressors (with Prof. Elza Erkip, accepted at ISIT 2024 Learn to Compress Workshop).
- Linear Time Spectral Density Estimation (with Prof. Chris Musco).

Bachelor's Thesis, Bogazici University

Istanbul, Turkey

Supervisor: Prof. Ali Emre Pusane

September 2019 - June 2020

- Studied Physical Layer based spoofing detection schemes.
- Worked on a Channel State Information based Physical Layer Authentication scheme for an autoregressive channel model (with Prof. Ali Emre Pusane, published).

Research Intern at Max Planck Institute

Stuttgart, Germany

Supervisor: Prof. Metin Sitti

June 2019 - August 2019

- Performed Experiments on actuation and localization of ferromagnetic micro robots in MRI systems.
- Developed a program to detect and track artifacts caused by ferromagnetic particles in MRI images.
- Obtained localization data by comparing MRI and X-ray images.

- Worked on short pulsed laser systems to acquire photo acoustic images
- Experimented on micro-bubble formations and self-assembly using optical tweezers

PUBLICATIONS AND PREPRINTS

Oguzhan Kubilay Ulger and Elza Erkip. “One-Shot Wyner–Ziv Compression of a Uniform Source” 2024. arXiv: 2405.01774 [cs.IT] (to appear at IEEE ISIT 2024)

Eyyup Tasci, Ezgi Ozyilkan, **Oguzhan Kubilay Ulger**, and Elza Erkip. “Robust Distributed Compression with Learned Heegard–Berger Scheme”, 2024. arXiv: 2403.08411 [cs.IT].

Oguzhan Kubilay Ulger and Elza Erkip. “Single-Shot Lossy Compression for Joint Inference and Reconstruction”, 2023 59th Annual Allerton Conference on Communication, Control, and Computing (Allerton). 2023, pp. 1–8. doi: 10.1109/Allerton58177.2023.10313437

Oguzhan Kubilay Ulger, Mehmet Ozgun Demir, Ozan Alp Topal, Gunes Karabulut Kurt, and Ali Emre Pusane. “Efficient Physical Layer Spoofing Detection with an Autoregressive Model”, 2020 43rd International Conference on Telecommunications and Signal Processing (TSP). 2020, pp. 382–385. doi: 10.1109/TSP49548.2020.9163441.

SKILLS

Programming & Software Languages

MATLAB, Python, PyTorch, C++, \LaTeX
Turkish(Native), English (Fluent)

TEACHING

NYU Tandon Electrical & Computer Engineering

Teaching Assistant

- Introduction to Probability (Fall 2021)
- Information Theory (Spring 2022)

HONORS AND AWARDS

North American School of Information Theory, Travel Grant

2022-2023

NYU Tandon School of Engineering, (SoE) Fellowship

August 2020-May 2022

Higher Education Institution (Turkish), Top 100 Scholarship

September 2014 - June 2019

Bogazici University, Outstanding Success Scholarship

September 2014 - June 2020