

## RESEARCH INTERESTS

---

Mathematical optimization, distributionally robust optimization, risk-aware decision-making & stochastic resource allocation, quantitative analysis, risk-constrained optimization, machine learning, information theory

## EDUCATION

---

### Yale University

Ph.D. Electrical and Computer Engineering

- **Advisor:** Prof. Dionysis Kalogerias
- **Concentration:** Stochastic Optimization & Decision-Making

New Haven, CT, USA

Aug. 2022 – Present

### Bogazici University

M.Sc. Electrical and Electronics Engineering, magna cum laude

- **Thesis Title:** Design, Analysis, and Channel Modeling of Molecular Multiple-Receiver Communication Systems
- **Thesis Advisor:** Prof. Ali Emre Pusane
- **Specialization:** Communications & Signal Processing

Istanbul, TR

Jan. 2020 – June 2022

### Bogazici University

B.Sc. Electrical and Electronics Engineering, cum laude

B.Sc. Physics, cum laude

Istanbul, TR

Sept. 2014 – Jan. 2020

Sept. 2016 – Jan. 2020

## RESEARCH EXPERIENCE

---

### RADIO Lab, Yale University

Graduate Research Assistant

- Distributionally robust stochastic optimization for resource allocation in wireless networks
- Risk-averse optimization via dual representation of coherent risk measures

New Haven, CT, USA

Aug. 2022 – Present

### Nanonetworking Research Group, Bogazici University

Graduate Research Assistant

- Channel impulse response modeling and capacity analysis of molecular MIMO topologies
- Implementation of molecular *index modulation*-based communication schemes
- Molecular communication modulations based on deep learning methods

Istanbul, TR

Jan. 2020 – July 2022

## TEACHING EXPERIENCE

---

### ENAS 435: Decisions and Computations Across Networks

Teaching Fellow

- Instructor: Prof. A. Stephen Morse, Yale University

New Haven, CT, USA

Spring 2024

### ENAS 432: Linear Systems

Teaching Fellow

- Instructor: Prof. A. Stephen Morse, Yale University

New Haven, CT, USA

Fall 2024

## CONFERENCES

---

- [1] G. Yaylali and D. Kalogerias, "Distributionally Robust Power Policies for Wireless Systems under Power Fluctuation Risk," *2024 58th Asilomar Conference on Signals, Systems & Computers*, Pacific Grove, CA, USA, 2024.
- [2] G. Yaylali and D. Kalogerias, "Stochastic Resource Allocation via Dual Tail Waterfilling," *2024 58th Annual Conference on Information Sciences and Systems (CISS)*, Princeton, NJ, USA, 2024, pp. 1-6.
- [3] Gokberk Yaylali and Dionysis Kalogerias, "Robust and Reliable Stochastic Resource Allocation via Tail Waterfilling," *2023 IEEE 24th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, Shanghai, China, 2023, pp. 256-260.

## JOURNALS

---

- [1] Gokberk Yaylali, Bayram C. Akdeniz, Tuna Tugcu and Ali E. Pusane, "Channel Modeling for Multi-Receiver Molecular Communication Systems," in *IEEE Transactions on Communications*, vol. 71, no. 8, pp. 4499-4512, Aug. 2023.
- [2] O. Kara, G. Yaylali, A. E. Pusane, and T. Tugcu, "Molecular index modulation using convolutional neural networks," *Nano Communication Networks*. Elsevier BV, p. 100420, Oct. 2022.

## PREPRINTS

---

- [1] G. Yaylali and D. Kalogierias, “Distributionally Robust Resource Allocation via Tail Waterfilling,” *under preparation*, 2025.
- [2] G. Yaylali and D. Kalogierias, “Quantile Optimization in Wireless Networks via Conditional Value-at-Risk,” *under preparation*, 2025.

## PROJECTS

---

### Risk-Aware Resource Allocation for Robust Wireless Autonomy

Aug. 2023 – Present

Principal Investigator: Prof. Dionysis Kalogierias

NSF Research Project

- Distributionally robust optimization for resource allocation in wireless autonomy. The duality with coherent risk measures emphasizes risk-averse stochastic programming, yielding ultra-reliable and efficient policies. A unified theory of distributionally robust optimization framework is developed, including comprehensive analysis.

### Design of Index Modulation-Based Molecular Communication Systems

Jan. 2020 – June 2022

Supervisor: Prof. Ali Emre Pusane

Bogazici NRG - TUBITAK Research Project

- Comprehensive analysis on molecular multiple-receiver systems in terms of communication performance and channel characteristics. Additionally, an elaborate channel modeling is developed for molecular multiple-receiver systems with fully-absorbing spherical receivers.

### Hand Gesture Recognition via AI

Apr. 2018 – June 2018

Term project

- Hand gesture recognition from live camera stream, via several machine learning methods such as *logistic regression*, *neural nets*, *decision tree* and *random forest*. Recognised hand gestures are fed into unsupervised *rock*, *paper*, *scissors* game.

## HONORS AND SCHOLARSHIPS

---

- Fully funded Ph.D. Fellowship by Yale University 2022 to 2023
- Special Achievement Award for Master’s Thesis by IEEE Communications Society Turkey Aug 2022
- Scientific Research Projects Scholarship by TUBITAK – (\$18k/year) 2020 to 2022
- Honor awarded by Bogazici University Faculty of Engineering & Faculty of Arts and Sciences Jan. 2020
- Domestic Undergraduate Scholarship by TUBITAK – (\$3k/year) 2016 to 2020
- Ranked Top 0.01% among 2 million students in the national university entrance exam June 2014

## PROFESSIONAL EXPERIENCE

---

### Pointr: The Deep Location Company

Istanbul, TR

Machine Learning Intern

June 2019 – Aug. 2019

- Development of a robust imputation service for positional data of indoor devices via deep learning techniques
- Utilization of positional data for business insights using other *Deep Analytics* services as per client specifications

## TECHNICAL SKILLS

---

**Technical Languages:** MATLAB, PYTHON, C/C++,  $\LaTeX$

**Libraries:** pandas, Tensorflow, PyTorch, numpy, scikit-learn

**Languages:** Turkish (native), English (full professional proficiency)

## REFERENCES

---

### Prof. Dionysis Kalogierias

dionysis.kalogierias@yale.edu

Assistant Professor

Department of Electrical and Computer Engineering

Yale University

### Prof. Ali Emre Pusane

ali.pusane@bogazici.edu.tr

Professor

Department of Electrical and Electronics Engineering

Bogazici University