

Mert Yuksekgonul

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EDUCATION

Bogazici University	Istanbul, Turkey
BSc in Computer Engineering	
BSc in Industrial Engineering. GPA: 3.97/4.0	Sep 2016 – Jun 2021
University of Toronto	Toronto, ON
Exchange Student, Computer Science. GPA: 4.0/4.0	Sep 2018 – Dec 2018

RESEARCH EXPERIENCE

Massachusetts Institute of Technology. Poggio & Sinha Labs	Jun 2020 – Present
Invariance in Neural Activity and Adversarial Examples	<i>Remote</i>
Supervisor: Dr. Xavier Boix	
<ul style="list-style-type: none">• Led the project on investigating invariances in neural activity under transformations.• Particularly, explored invariance in adversarial examples context in order to understand how they fool the models.• Found that adversarial attacks target certain regions and neurons of neural networks based on the properties of the input image. Preprint is available, work is submitted.	
Harvard University and Max Planck Institute. Bethge & Mathis Labs	Jun. 2019 – Sep 2019
Out of Distribution Robustness in Pose Estimation	<i>Tübingen, Germany</i>
Supervisors: Dr. Alexander Mathis , Dr. Mackenzie Mathis , Dr. Matthias Bethge	
<ul style="list-style-type: none">• Worked on 2D&3D Pose Estimation problems on animals and humans• Explored generalization and robustness in pose estimation architectures.• Our aim was to make a robust and accessible tool for animal and human behaviour analysis for neuroscientists that could be used at <i>every</i> lab. Published in ICML 2020 UDL Workshop.	

Bogazici University	Fall 2019
Interpretability in Multiple Instance Learning	<i>Istanbul, Turkey</i>
Supervisor: Dr. Mustafa Gokce Baydogan	
<ul style="list-style-type: none">• Worked on interpretability on multiple instance learning.• The aim was to build a model with comprehensible decisions, to be deployed in critical environments.• Designed an algorithm that utilizes interpretable prototypes, published in NeurIPS 2019 Sets & Parts Workshop.	

PUBLICATIONS

- On the Poisonous Activity Driving Adversarial Attacks.
Yuksekgonul, M., Madan S., Sasaki T. and Boix X. *Soon on ArXiv*, 2020
- Learning Maximally Predictive Prototypes In Multiple Instance Learning
Yuksekgonul, M., Sivrikaya, O. and Baydogan, M. *Sets&Partitions Workshop NeurIPS, 2019*. [ArXiv](#)
- ImageNet performance correlates with pose estimation robustness and generalization on out-of-domain data.
Mathis, A., Biasi, T., **Yüksekgönül, M.**, Rogers, B., Bethge, M. and Mathis, M. *Uncertainty & Robustness in Deep Learning, ICML 2020*. [Preprint: ArXiv](#)

INVITED TALKS

Bethge Lab, Tübingen AI Center	Jun 2019
Out of Distribution Robustness in Pose Estimation	<i>Tübingen, Germany</i>
Visual Computing Lab, Harvard University	Aug 2020
Neural Mechanisms Driving Adversarial Examples	<i>Remote</i>
Sinha Lab, Massachusetts Institute of Technology	Sep 2020
Neural Mechanisms Driving Adversarial Examples	<i>Remote</i>
Poggio Lab, Massachusetts Institute of Technology	Oct 2020
On the Poisonous Activity Driving Adversarial Examples	<i>Remote</i>

ACCOMPLISHMENTS

Scholarships and Fellowships

- Fulbright Master's Grantee (\$100,000)
- Erasmus+ Traineeship (€4,500)
- Turkish Educational Foundation Success Scholarship(4yr, \$10,000)
- Ciceksepeti Academic Excellence(1yr, \$2,000)
- Turkish Government Scholarship (4yr, \$10,000)
- Bogazici University Outstanding Success(5yr, \$7,500)
- Tübingen AI Center(Summer'19, €4,000)
- ETH(Summer'20, CHF3,000, declined to go to MIT)
- High-School Full Merit Scholarship(5yr, \$30,000)
- MIT - Fujitsu Laboratories (Summer'20, \$6,000)

Highlights

- Ranked as 32nd/2,086,087 in 2016 OSYS (Turkish equivalent of SAT). 2 times 1st/1,070,445 in high-school entrance exams in Turkey.
- One of the 2 students (out of ≥ 1000 in either department) currently in the double major program. One of the top students in terms of GPA in both departments (exact rank announced during graduation. Average GPA across these departments ≤ 3.10)

OTHER WORK EXPERIENCE

Research & Teaching Assistant

Sep 2019 – Present

[Bogazici University](#)

Istanbul, Turkey

- Teaching assistant of IE360 (Statistical Forecasting & Time Series Analysis) and ETM58D (Business Analytics)
- Grading students' homeworks, implementing an online submission system using Django and Django web frameworks in Python, that allows the students to implement real life prediction pipelines and data pipelines.
- Working with Dr. Mustafa Baydogan, working on multiple instance learning, time series classification and spatiotemporal deep learning.

Supply Chain Optimization Analyst

Jan 2020 – Feb 2020

[getir](#)

Istanbul, Turkey

- Worked on vehicle routing optimization and demand planning.
- Deployed machine learning algorithms, genetic algorithms and nonlinear optimization algorithms in production.

Research Student

Sep 2018 – Dec 2018

[University of Toronto - TIDEL Lab](#)

Istanbul, Turkey

- Worked on motion planning domain, utilizing imitation learning techniques. Experimented in motion planning, using basic search algorithms like A* and GBFS, by the help of reinforcement learning and imitation learning.
- Conducting experiments on constrainedness, heuristics and heavy tailed behavior of learning algorithms.

Data Scientist

Aug 2018 – Sep 2018

[Algopoly](#)

Istanbul, Turkey

- Focused on time series classification and forecasting problems in sports analytics.
- Built and deployed a model for predicting the outcomes of sports games, using supervised learning leveraged by time series analysis.

Machine Learning Engineer Intern

Jun 2018 – Jul 2018

[Armut.com](#)

Istanbul, Turkey

- Project was to build the first recommendation engine of the company from scratch.
- Conducted experiments, research on recommender systems, used algorithms from collaborative filtering and frequent itemset mining approaches.
- More than doubled the existing baseline and deployed the model using AWS Sagemaker and built Rest APIs.

RELEVANT COURSEWORK

Bogazici University

- Deep Learning
- Nonlinear Optimization
- Stochastic Models in Operations Research
- Efficient Monte Carlo Simulation
- Statistical Forecasting and Time Series Analysis
- Systems Simulation

University of Toronto

- Machine Learning and Data Mining
- Algorithm Design, Analysis and Complexity
- Algorithmic Game Theory
- Introduction to Artificial Intelligence

VOLUNTEERING

Volunteer Coordinator & Organization Committee Lead

[Fikret Yuksel Foundation, FIRST Robotics Competition - Turkey](#)

Responsible for ≥ 500 volunteers, organizing robotics tournaments for 1000s of high schoolers.

Aug 2015 – Present

Istanbul, Turkey

Event Volunteer

[Bilim Kahramanlari, FIRST Lego League - Turkey](#)

Responsible for coordination of judging, robot matches and projects for students of age 9-16.

Jan 2017 – Present

Istanbul, Turkey

Volunteer

[International Conference on Machine Learning 2020](#)

Helped with organizing presentations, monitoring chat-rooms and prior preparation to the conference.

Jul 2020 – Present

Remote

SKILLS & INTERESTS

Languages: Python, R, C/C++, SQL

Frameworks: PyTorch, Tensorflow, Keras, Django, Numpy, Scikit Learn

Interests: Strength training, wellness, powerlifting, nutrition, volunteering