

# Berk Idem

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## Professional Experience

### Pennsylvania State University

University Park, PA

Machine Learning Researcher

2022- Present

- Develop and implement deep learning and computer vision models that combine terabytes of images and structured weather data to predict air pollution.
- Achieve over 10% improvement in the performance of state-of-the-art air pollution predictions.
- Utilize Python and libraries such as PyTorch, Pandas, Scikit-learn, NumPy, LightGBM, and XGBoost.

### Pennsylvania State University

University Park, PA

Graduate Research and Teaching Assistant

2016- 2022

- Assist academic research on Optimization, Computer Science, and Statistics using Python and MATLAB.
- Teach Introduction to Economics, Microeconomics, and Game Theory (~150 students/year); lecturing and grading.

### Bilkent University

Ankara, Turkey

Graduate Research Assistant

2014- 2016

- Assist academic research on Econometrics and Statistics using Python and MATLAB.

## Education

### Pennsylvania State University

University Park, PA

PhD in Economics (Econometrics and Quantitative Economics)

2022

### Bilkent University

Ankara, Turkey

MA in Economics

2016

### Bilkent University

Ankara, Turkey

BA in Economics

2014

## Relevant Skills

**Machine Learning:** Random Forests, Gradient Boosting, Deep Learning, Neural Networks, Computer Vision, NLP

**Econometrics:** Logistic Regression, Causal Inference, Experimental Design, A/B Testing, Synthetic Controls, Reduced-Form Analysis, Panel Data, Time Series

**Programming Skills:** Python (NumPy, Pandas, PyTorch, Scikit-Learn, PySpark, Tensorflow, Keras, Matplotlib, Seaborn), SQL, Mathematica, MATLAB, HTML, CSS

**Other Software Skills:** Linux, Git, Docker, Gurobi,  $\LaTeX$ , WSL, MS Office

**Economics:** Statistical Modeling, Simulations, Optimization, Operations Research, Game Theory, Auctions, Market Design

**Languages:** Turkish (native), English (fluent), Spanish (intermediate), Italian (beginner)

## Selected Projects

### Predicting Air Pollution Using Deep Learning

Predicted air pollution levels by developing a deep learning pipeline that combines computer vision and gradient-boosting frameworks. Analyzed satellite imagery and geospatial data as part of a team.

### Predicting American Sign Language (ASL) Signs

Developed models for predicting ASL signs from frames of videos based on the landmark points of hands and face using RNNs and other methods (PyTorch, TensorFlow).

### Pulsar Star Classification

Led a team of researchers in developing classification models to identify Pulsar stars using various methods including random forests (Scikit-learn), gradient boosting (XGBoost, LightGBM, CatBoost) and neural networks (PyTorch).

## Selected Conference and Seminar Presentations

Invited seminars at Koc U., Corvinus U., NYU-AD; Social Choice & Welfare; European Meeting of GT	2022
European Winter Meeting of ES; Midwest ET Conference; Economics and Computation (EC); Story Brook GTC	2021
Conference on Mechanism and Institution Design	2020