

# EDA BAYRAM

Dublin, Ireland

## CONTACT INFORMATION

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## PROFILE

Researcher in artificial intelligence with PhD in computer science. Passionate about machine learning for graph structured data, knowledge representation, reasoning and learning. With a combined 10 years of research and engineering experience in both academic and industry settings.

Coding skills with Python and DL frameworks such as PyTorch and TensorFlow, experience with git and issue tracking systems.

**Languages:** Turkish (native), English (fluent), French (B1), German (A2)

**CliftonStrengths:** Discipline | Learner | Input | Relator | Intellection

## EDUCATION

SEP 2023 -  
CURRENT

MSC, COGNITIVE SCIENCES

**University College Dublin (UCD)**, Ireland

- Course work and research projects in the cross-disciplinary field of psychology, neuroscience, linguistics, philosophy and computer science.

SEP 2021 -  
APR 2017

PHD, COMPUTER SCIENCE

**École Polytechnique Fédérale de Lausanne (EPFL)**, Switzerland

- Research projects on *Graph Representation Learning*, *Knowledge Graph Completion*, *Statistical Inference with Graphical Models*, *Graph Signal Processing*,
- Teaching assistant in courses *Digital Signal Processing*, *Network Data Science*,
- Supervision of master students' semester projects in *Graph Signal Processing*, *Graph Representation Learning*,
- Courses: *Optimization for Machine Learning*, *Computational Optimal Transport*, *Network Data Science*, *Teaching Science Engineering*,
- Thesis study: *Representation Learning on Multi-relational Data*, Advisor: [Prof. Pierre Vandergheynst](#).

FEB 2017 -  
SEP 2014

MSC, ELECTRICAL AND ELECTRONICS ENGINEERING (Honor Student)

**Middle East Technical University (METU)**, Turkey

- Specialization on adaptive signal processing with courseworks on linear algebra, optimization, machine learning, computer vision and image processing
- Thesis study on exploitation of spectral graph theory and graph signal processing frameworks for the analysis of 3D LiDAR point clouds under co-supervision of Prof. Aydın Alatan and Prof. Elif Vural.

JUN 2013 -  
SEP 2009

BSc, ELECTRICAL AND ELECTRONICS ENGINEERING (Honor Student)

**Middle East Technical University (METU)**, Turkey

- Senior year specialization on telecommunications and signal processing
- Graduation project: Interior route-finding, wearable assistive device for visual-defective people

## WORK EXPERIENCE

CURRENT -  
FEB 2022

AI RESEARCHER

**Accenture Labs, Dublin**, Ireland

- Research on graph machine learning and explainable AI mainly in biology, medicine and healthcare domain with university collaborations towards paper submissions to machine learning and data mining conferences

	<ul style="list-style-type: none"> <li>• Implementation of code base, proof of concept and prototypes for query answering systems on biomedical databases, knowledge graph embedding learning for multi-hop link prediction</li> <li>• Patent submissions and supervision of PhD intern students with research on neuro-symbolic models for explainability, transparency and computation-memory-parameter efficiency with ontology-driven graph representation learning</li> </ul>
JAN 2017 - MAY 2015	SYSTEM AND DESIGN ENGINEER <b>Aselsan SST (R&amp;D Defense Industry)</b> , Turkey <ul style="list-style-type: none"> <li>• Research and development of target tracking algorithms for day-TV and thermal camera systems.</li> </ul>
APR 2015 - JUL 2013	SOFTWARE ENGINEER <b>Aselsan MGEO (R&amp;D Defense Industry)</b> , Turkey <ul style="list-style-type: none"> <li>• Software design and development for the communication of the peripheral modules in embedded systems.</li> </ul>

## ACADEMIC COHORTS

### TALKS AND CONFERENCE PARTICIPATION

- Participation and presenter in *IEEE SPS/EURASIP Summer School in Network and Data-Driven Learning Fundamentals*, May 2019, Lecce, Italy
- Seminar on *Structure Inference @ METU, OGAM*, Jan 2020, Ankara, Turkey
- Presenter in *2020 IMPRS-IS PhD Symposium @ The International Max Planck Research School for Intelligent Systems*, Tübingen, Germany
- Lightning Talk @ *WiDS Cambridge 2021* virtual conference
- Participation and presenter in *IJCLR 2021 Workshop: Statistical Relational AI (StarAI)*

### EVENT ORGANIZATION

- Organization team member of *3rd Graph Signal Processing Workshop – GSP’18* at EPFL, Switzerland
- Volunteer in the organization of *SIGKDD’20*, virtual conference
- Volunteer in the organization and presenter in *WiML 2020 @NeurIPS* virtual conference
- Program committee member of *Workshop on Graph Neural Networks and Systems – GNNSys’21 @ MLSys* virtual conference
- Organizer and presenter of *Tutorial: Knowledge Graph Embeddings for NLP: From Theory to Practice (KGE4NLP) @ COLING 2022*, Gyeongju, Republic of Korea

### OTHERS

- Reviewer for IEEE-TSIPN 2020 *Transactions on Signal and Information Processing over Networks*
- Research Fellowship in *DAAD AINet 2021*, German Academic Exchange Service (DAAD)
- Participation in the mentoring program organized by *Fix the Leaky Pipeline @ ETH* domain
- Reviewer for *Learning on Graphs (LoG) Conference 2022*
- Reviewer for *SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2023*
- Reviewer for *Learning on Graphs (LoG) Conference 2023*

## PUBLICATIONS

- Izzy Newsham, Eda Bayram, Luca Costabello, "Subgraph Imputation for Open Query Answering in Incomplete Knowledge Graphs", under review, Feb 2023.
- Eda Bayram, "Representation Learning for Multi-relational Data", *Doctoral Thesis*, EPFL, Dec 2021.

- Eda Bayram, "Propagation on Multi-relational Graphs for Node Regression", *International Conference on Complex Networks and Their Applications*, 2021. Springer
- Eda Bayram, Alberto Garcia Duran and Robert West, "Node Attribute Completion on Knowledge Graphs with Multi-Relational Propagation", *ICASSP - IEEE International Conference on Acoustics, Speech and Signal Processing*, 2021
- Eda Bayram, Dorina Thanou, Elif Vural and Pascal Frossard, "Mask Combination of Multi-layer Graphs for Global Structure Inference", *IEEE Transactions on Signal and Information Processing over Networks* 6 : 394-406, 2020
- Eda Bayram, Pascal Frossard, Elif Vural and Aydin Alatan, "Analysis of airborne LiDAR point clouds with spectral graph filtering", *IEEE Geoscience and Remote Sensing Letters* 15.8 : 1284-1288., 2018
- Eda Bayram, Elif Vural, and Aydin Alatan. "A graph signal filtering-based approach for detection of different edge types on airborne lidar data" *Lidar Technologies, Techniques, and Measurements for Atmospheric Remote Sensing XIII. Vol. 10429. International Society for Optics and Photonics*, 2017.
- Eda Bayram, "Spectral Graph Based Approach for Analysis of 3D LiDAR Point Clouds" *Master Thesis, METU, Ankara*, 2017.

## PATENTS

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- Eda Bayram, Luca Costabello "Ontology-Driven Parameter-Efficient Representations for Knowledge Graphs", *U.S. Patent Application* 18/161,260 filed in January 30, 2023
- Eda Bayram, Adrianna Janik "Rule-based hypothesis refinement module for link prediction systems", *U.S. Patent Application* 18/356,832 filed in July 21, 2023
- Adrianna Janik, Eda Bayram, Alberto Bernardi "Explanations for Knowledge Graph Embedding Models Based on Game Theory", *U.S. Patent Application* to be filed in June 15, 2023