

## EDUCATION

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- **University College Cork** Cork, Ireland  
*Doctor of Philosophy - Computer Science — Thesis Title: Bayesian Bilevel Optimization* Oct 2019 - Oct 2023
  - I finished my PhD as a fully-funded (Science Foundation Ireland - SFI ) researcher in Confirm Smart Manufacturing Centre, University College Cork, working on Artificial Intelligence and Machine Learning algorithms, precisely conducted my research on game-theoretic decision-making models, bilevel optimization and Bayesian approach.
  - I used various kinds of machine learning algorithms during my research for classification and regression tasks, such as Random Forest, Support Vector Machine, KNN etc.
  - I also worked on a hyperparameter optimization task for an automated machine-learning pipeline by taking advantage of black-box approaches. I had experience working on generic population-based meta-heuristic algorithms during the training process of the machine learning pipeline.
- **Athlone Institute of Technology** Athlone, Ireland  
*Higher Certificate of Engineering - Electronics and Computer Engineering; GPA: 82.66/100* Sep 2015 - Jun 2016
  - I studied at Athlone Institute of Technology as an Erasmus exchange student for a year. As a final project, I built a home alarm system using Arduino and visualized using Processing3.
- **Yildiz Technical University** Istanbul, Turkey  
*Bachelor of Engineering - Mathematical Engineering; GPA: 3.04/4.00* Sep 2013 - Aug 2018
  - I graduated with Honour (Top 10 of my class). During my education, I have focused on software development and mathematical algorithmic development.
  - My final year project was a machine learning project on sensor data with the task of human activity recognition using a Random Forest algorithm for the supervised learning task. It also includes working on feature engineering of sensor data.

**Project:** Data Mining and Machine Learning / Human Activity Recognition with Sensor Data  
**Courses:** Operational Research, Probability Theory, Advanced Calculus I/II, Probability Theory, Partial Differential Equations, Finite Element Method, Philosophy of Science, Integral Transformations, Numerical Analysis, Complex Analysis

## EXPERIENCE

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- **Insight SFI Research Centre for Data Analytics / University College Cork** Cork, Ireland  
*Postdoctoral Researcher (Full-time)* March 2024 - Present
  - Currently, I am working on AI-supported decision-making systems on game-theoretic optimization models, and I am currently developing algorithms to solve hierarchical multi-level optimization problems with advanced machine learning techniques. Besides that, extending my existing work to network representation data and working with graph neural network (GNN) algorithms is in my interest.
- **Insight SFI Research Centre for Data Analytics / University College Cork** Cork, Ireland  
*Research Assistant (Full-time)* Oct 2023 - March 2024
  - I worked on network data analysis and developing a game-theoretic approach to network reshaping problem, identifying the most influential node in a network and link prediction between unconnected networks with a supervised learning approach.
- **Garanti Technology / BBVA Group** Istanbul, Turkey  
*Software Engineer (Full-time)* July 2018 - Oct 2019
  - I worked on an IBM mainframe for the Treasury Department of Garanti Bank / BBVA Group.
  - I developed software using STEP (JAVA), and db2 (IBM) databases using IBM tools including COBOL, CoolGen and Oracle databases.
- **Kafein Software Solutions** Istanbul, Turkey  
*Software Engineer Consultant (Full-time)* March 2018, July 2018
  - I used Tibco tools to find solutions to defects on Vodafone, find and work with flows to find the right point of defects and micro-services such as Kubernetes.
  - I improved the skill of having good conversations with the customers about understanding their needs.
- **Eteration Software Solutions** Istanbul, Turkey  
*Software Developer (Intern)* Dec 2017, Jan 2018
  - **Project:** React Native GUI and Appium Test Automation System
- **Milli Reassurance** Istanbul, Turkey  
*Software Developer (Intern)* Dec 2017, Jan 2018
  - **Project:** Java-based internal chat application.

## INTERESTS

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- **Artificial Intelligence:** *in* Diplomacy, Military Applications, Supply Chain Management, Environmental Economics, Optimal Design, Game-theoretic Decision Making Systems, Smart Manufacturing
- **Machine Learning:** Automated Machine Learning, Multi-Task Learning, Meta-Learning, Supervised/Semi-supervised/Unsupervised Learning
- **Optimization:** Bi-level, Bayesian, Black-Box, Multi-Objective, Multi-Task, Hyper-parameter, Non-convex, Global Optimization

## PUBLICATIONS

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- **Bayesian Optimization With Multi-objective Acquisition Function for Bilevel Problems**  
**Conference:** *AICS: 30th Irish Conference on Artificial Intelligence and Cognitive Science:*  
*Keywords: Bayesian Optimization, Bilevel Optimization Problems, Multi-objective Acquisition, Multi-objective Optimization*
- **A Batch Bayesian Approach for Bilevel Multi-Objective Decision Making Under Uncertainty**  
**Conference:** *AAAI'23: The 37th AAAI Conference on Artificial Intelligence, Workshop on Uncertainty Reasoning and Quantification in Decision Making:*  
*Keywords: Decision-making under Uncertainty, Multi-objective Optimization*
- **Bilevel Optimization by Conditional Bayesian Optimization**  
**Conference:** *LOD2023: The 9th International Conference on Machine Learning, Optimization, and Data Science:*  
*Keywords: Bilevel Optimization, Conditional Bayesian Optimization, Stackelberg Games, Gaussian Process*
- **BHO-MA: Bayesian Hyperparameter Optimization with Multi-objective Acquisition**  
**Conference:** *OL2A: International Conference on Optimization, Learning Algorithms and Applications:*  
*Keywords: Bayesian Optimization, Multi-objective Optimization, Hyperparameter Tuning*
- **Multi-objective Bilevel Decision Making with Noisy Objectives: A Batch Bayesian Approach**  
**Conference:** *ECAI'23, Multi-objective Decision Making (MODeM'23) Workshop:*  
*Keywords: Decision-making under Uncertainty, Multi-objective Optimization*

## SKILLS SUMMARY

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- **Languages:** Python, SQL, JAVA
- **Frameworks:** Sklearn, PyTorch, BoTorch, GPy, GPyOpt, SciPy, NumPy, Pandas, PyTorch Geo, Deep Graph Library (DGL), NetworkX
- **Algorithms:** Meta-modeling, Bayesian Methods, Genetic Algorithms, Evolutionary Algorithms, Graph Neural Networks, Neural Networks, Random Forest, KNN, Support Vector Machines
- **Tools:** GIT, MySQL, Streamlit, Oracle, VSCode, PyCharm, Kubernetes, Docker, LaTeX
- **Platforms:** MacOS, Windows, Arduino
- **Soft Skills:** Writing, Public Speaking, Time Management, Organizing, Collaborating, Event Management

## PROJECTS

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- **Data Mining and Machine Learning Project / Human Activity Recognition ( Sensor Data):**
  - The main idea of this supervised learning project is to recognize human activity from mobile devices which include their hardware accelerometer and gyroscope sensors. I used various datasets for deciding the importance of mobile or watch and the sensor type.  
*Tech :* Python ( Sklearn, NumPy, Pandas, MySQL, matplotlib, Seaborn )
- **Java Project / Chat Application:**
  - I developed a chat app which meets the needs of the IT department of the company and it has protected other networks than the company's network and possible hack attacks from the public network, and the app is based on Java Programming Language.  
*Tech :* Java, Maven Technologies on Eclipse, MySQL
- **Arduino Project / Alarm System:**
  - The project has been done as a final project on the Erasmus+ program in Ireland at Athlone Institute of Technology.
  - First of all, I implemented the circuits on the Arduino UNO board and identified the ones that are necessary for an alarm system. Finally, I developed the software and uploaded which does instalments on the board. The software is based on the C programming language and the Arduino IDE has been used as an editor.  
*Tech :* Arduino Programming Language, Processing3

## LANGUAGES

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- **English:** Professional Working Proficiency
- **Turkish:** Native Proficiency

## REFERENCES

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- **Dr. Steven Prestwich:** *E-Mail:* s.prestwich@cs.ucc.ie / *Mobile:* +353 (86) 121 4439