KURSAT KILIC

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Education

2021 – Present
Akita, Japan

PhD Candidate
Akita University
I am a PhD candidate in the mining informatics laboratory at Akita University in Japan. The PhD research is regarding artificial intelligence applications on mechanical excavation performance prediction and analysis using ML/DL models. I have focused on tunnel boring machine (TBM) tunnelling and geomechanics information to increase tunnelling efficiency while decreasing time-consuming operations and the cost of TBM. I work to develop autonomous control of TBM advancement based on acceleration sensor data information and operator's decision using ML/DL methods.

2018/10 – 2020/10
Torino, Italy

Master of Science; MSc.
Politecnico di Torino
I was a master's degree student at Politecnico di Torino in Italy. I have taken several courses such as excavation engineering, structural mechanics, risk analysis, underground mining, tunnelling and geophysics. I have prepared a master thesis regarding TBM performance analysis in hard rock using IBM SPSS based on the Intermediate Linear Cutting Machine dataset.

2010/09 – 2016/05
Muğla, Turkey

Bachelor of Science
Muğla Sıtkı Koçman University
It was a bachelor's degree education in a mining engineering discipline.

Professional Experience

2022/03 – present
Munich, Germany

Operation Team Member
TUM Boring - Innovation in Tunnelling e.V.
A position as a "Tunnel Boring Operation Team Member" within Elon Musk's "Not a Boring Competition" entails joining a dynamic team dedicated to pushing the boundaries of tunnelling technology and innovation. As a vital member of the group, your responsibilities would include:
Tunnel Boring Machine (TBM) Operation: Operate and maintain advanced TBMs, ensuring optimal performance during excavation.
Innovation and Problem Solving: Participate in problem-solving sessions and propose innovative solutions to enhance TBM performance.
Safety and Quality Assurance: Adhere to strict safety protocols and maintain the highest quality standards throughout tunnelling.
Collaboration: Collaborate closely with engineers, data scientists, and other team members to continuously improve the TBM's efficiency and overall project success.
This role offers a unique opportunity to be at the forefront of tunnelling technology and AI integration, contributing to developing groundbreaking solutions. If you're passionate about TBM efficiency and high-performance excavation, this position in Elon Musk's "Not a Boring Competition" is an exciting and challenging opportunity to make a significant impact.

2021/04 – present
Tokyo, Japan

Artificial Intelligence Researcher
ISEKI Poly Tech.
I work as an artificial intelligence PhD researcher with ISEKI Poly Tech microtunnelling machines. The purpose of the research is to identify factors affecting TBM tunnelling excavation using AI and improve ISEKI microtunnelling technology.

2019/07 – 2019/08
AAchen, Germany

Voluntary Research Intern
RWTH AAchen - AMT Lab
I was a short-term research student at RWTH Aachen University. The research was about smart rock excavation.

2017/12 – 2018/08
Fethiye, Turkey

Underground Shift Engineer
ETI Electrometallurgy INC.
I worked as an underground shift engineer in chromite mining production. I have been responsible for cut and fill mining methods, fault measurement, and underground shift management. I governed 12 miners during 8 hours of mining production. The company works three shifts method.

Skills

Python ●●●●○
Machine Learning and Deep Learning applications using pandas, NumPy, matplotlib, sklearn, TensorFlow and Keras.

IBM SPSS ●●●●○
Statistical Analysis

Excel ●●●●○

OriginPro ●●●●○
Signal Processing and Analysis

R programming ●●●○○
Explaroty Data Analysis (EDA)

Publications

2023/02/16

Soft Ground Tunnel Lithology Classification using Clustering-guided Light Gradient Boosting Classifier
Journal of Rock Mechanics and Geotechnical Engineering - Elsevier
The paper has been accepted for publication but it will be published as Volume 16; N1 in January 2024.

2022/02/25

One-Dimensional Convolutional Neural Network for Pipe Jacking EPB TBM Cutter Wear Prediction
MDPI Applied Science
An earth pressure balance (EPB) TBM is used in soft ground conditions, and these conditions lead to the fluctuation and instability of machine parameters. Machine parameters influence cutter wear and tunnel excavation. For this reason, to evaluate and predict the cutter wear of an EPB TBM, a 1D CNN model was used to provide machine-parameter-based cutter wear prediction using an EPB TBM operational dataset

2022/11/22

Soft Ground Tunnel Lithology Classification using Resampling and Supervised Learning
World Tunnelling Conference, Greece, 2023
World Tunnelling Conference, 2023 Greece. Conference paper.

Certificates

- Introduction to AI and Deep Learning / Global AI Hub
- Python Machine Learning - Udemy
- Reviewer - MethodsX Elsevier

Awards

2021/04/03 **MEXT Research Fellow**
Ministry of Education, Culture, Science and Technology - JAPAN
I have been nominated MEXT scholarship for the PhD research in Japan.

TEV (Turkish Education Foundation)
TEV
Merit-based successful bachelor's degree students scholarship in Turkey.

2018 **EDISU Scholarship**
Piemonte Torino
I was awarded the Politecnico di Torino Master's Scholarship.

Languages

English
IELTS Academic

Turkish

Japanese