Ozgur Taylan Turan

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Education

Delft University of Technolgy

- Structural Engineering MSc. 2018-2020
- Computer Science and Mathematics PhD. 2020-

Middle East Technical University

- Environmental Engineering BSc. 2011-2016
- Civil Engineering BSc. 2013-2017
- Structural Engineering MSc. 2017-2018(Dropout)

Experience

Delft University of Technology

- PhD in Pattern Recognition Lab at EEMCS Faculty 2020 -

Middle East Technical University

- Research Assistant 2017-2018(1 year)

Renaissance Construction

- Civil Engineering Intern 2016(1 month)

Yuksel Project

- Civil/Environmental Engineering Intern 2015(1 month)

Tupras

- Environmental Engineering Intern 2014(1 month)

Personal Skills

Language

Language	Reading	Listening	Writing	Speaking
Turkish*	C2	C2	C2	C2
English**	C2	C2	C2	C2
German***	A2	A2	A2	A2
Dutch	A2+	A2+	A2+	A2+

*: Native, **: TOEFL-Score(2017) 109/120, *** Goethe Institute A2(2018) German Course Certificate

Programming

Experienced

- C/C++ (JEM-JIVE-torchlib-armadillo-mlpack)
- Matlab/GNU-Octave
- Docker
- Bash/Zsh
- LaTeX
- Python(NumPy-SciPy-scikit-GPy-Pytorch)

Familiar

- Tcl
- Maple

Research Interests

- Multi-scale/Multi-physics Modelling
- Computational Mechanics
- Supervised Learning
- Few-shot Learning
- Meta Learning
- Transfer Learning
- Continual Learning

Papers

9th New York City Bridge Conference **2017**

A Conceptual Design of a Footbridge over Kizilirmak River that Allows Pedestrian Induced Vibrations

BNAIC-BeNeLearn/Belgium **2022**

When MAML Learns Quickly, Does It Generalize Well?

ArXiv/2023-ICLR Workshop Submission(On-going) **2022/2023**

Cooperative Data-Driven Modeling

Awards

Middle East Technical University

- Cum Laude: Delft University of Technology Structural Engineering
- 2016 First Ranking Student: Environmental Engineering
- 7x High Honor List/1x Honor List: Environmental Engineering
- 4x High Honor List/2x Honor List: Civil Engineering

PROJECTS

DELFT UNIVERSITY OF TECHNOLOGY

MLCXX 2023

- A compiled machine learning library that works with input files.
- Fast and cross-platform training with libtorch and mlpack models.
- Easy model deployment via docker.

DATA DRIVEN SURROGATE CREATION TOOL 2022

- Object-oriented generalized data driven surrogate creation tool.
- Seamless data-generation and surrogate creation tool with modular expandibility utilizing other python packages.

MULTI-SCALE COMPUTATIONAL HOMOGENIZATION WITH FENICS 2022

- Object-oriented homogenization scheme creation.
- Computational homogenization scheme for Hyper-elastic material.

GPY RECURSIVE MULTI-FIDELITY REGRESSION IMPLEMENTATION 2020

- Spare time project.
- Expanding the framework utilized in the MSc thesis.
- Expanding the open source software.

SURROGATE CONSTITUTIVE MODELS WITH MULTI-FIDELITY GAUSSIAN PROCESSES FOR COMPOSITE MICROMODELS 2020

- Conducted for MSc Thesis (CIE5060-09).
- Numerical composite modeling is done with Concurrent Finite Element Method (FE^2).
- Exotic Gaussian Process applications (co-kriging with derivative information/co-kriging with multi-fidelity information) are utilized for surrogate modeling.
- Feed-forward Neural Networks are utilized for surrogate modeling.
- JEM/JIVE toolkit has been utilized for C++ implementation.

OBJECT ORIENTED 1-D LINEAR FEM APPLICATION HFEM-PFEM (PYTHON) 2020

- Conducted for the Advanced Finite Element Course.
- Introduction to the pFEM.

REDUCED ORDER BASE CREATION WITH BAYESIAN OPTIMIZATION(C++/PYTHON) 2020

- Conducted as Additional Graduation Work (CIE5050-09).
- Introduction to multi-scale modeling and model order reduction techniques.
- JEM/JIVE toolkit has been utilized for C++ implementation in combination with python.

HEAT EQUATION SOLVER WITH HOME MADE LINEAR ALGEBRA TOOLS(C++) 2020

- Conducted for the Object Oriented Scientific Programming in C++ (WI4771TU) Course.
- Sparse matrix and vector storage, operations with conjugate gradient method was implemented.

BAYESIAN OPTIMIZATION WITH SCI-KIT LEARN LIBRARY FOR GAUSSIAN PROCESSES(PYTHON) 2019

- Conducted as a spare time project.
- Introduction to statistical machine learning concepts.

SIMPLE ARC-LENGTH SOLVER FOR ONE DIMENSIONAL PROBLEM(PYTHON) 2019

- Conducted as a spare time project.
- Introduction to complex non-linear solvers.

LINEAR FINITE ELEMENT PROCEDURE(MATLAB) 2019

- Conducted as a spare time project.
- Utilized Matlab's own meshing functionality to get rid of external meshing tools for simple FEM implementation.

MIDDLE EAST TECHNICAL UNIVERSITY

FINDING THE INTERSECTION OF A DATA CLOUD WITH A LINE(MATLAB) 2018

- Conducted as a part of a research project.
- Utilized for finding the intersection points of interaction diagram for concrete column design.

SOLVING CAHN-HILLIARD EQUATION WITH LYZA(BY ONUR SOLMAZ) 2018

- Conducted for the Finite Element Method (CE526) Course.
- Introduction to Non-linear PDE's, Docker, Fenics Project and Lyza.

DATABASE CREATION FOR BI-AXIAL MOMENT AND SHEAR CAPACITIES OF CONCRETE COLUMNS(MATLAB) 2018

- Conducted as a part of a research project.

DESIGN OF A PEDESTRIAN BRIDGE OVER KIZILIRMAK RIVER(LARSA4D/MATLAB) 2017

- Conducted for the Civil Engineering Design (CE410) Course.
- Introduction to LARSA4D and bridge design.

DESIGN OF A WASTE-WATER TREATMENT PLANT IN GEREDE LEATHER ORGANIZED INDUSTRIAL ZONE 2016

- Conducted for the Environmental Engineering Design (ENVE407-408) Course.
- 6 people group project that lasted 9 months.

ANAEROBIC DIGESTION MODELING OF ORGANIC WASTE FOR ENHANCED METHANE PRODUCTION(MATLAB) 2016

- Conducted for the Environmental Modeling (ENVE404) course.
- Introduction to ODE's with Matlab.

TEACHING/SUPERVISION ACTIVITIES

DELFT UNIVERSITY OF TECHNOLOGY

RESEARCH PROJECT (CSE3000) 2020/2022

- Creating machine learning projects.
- Supervising a group of BSc students.

MACHINE LEARNING-I (CS4220) 2021/2022

- Creating and evaluating exam questions.
- Helping in the tutorial sessions.

FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE (IFEEMCS520100) 2021/2022

- Creating projects in the interface of material science and machine learning.
- Supervising a group of BSc students.

DATA-DRIVEN DESIGN AND ANALYSES OF MATERIAL AND STRUCTURES (MS43815) 2022

- Creating and evaluating final project.

REFERENCES

DAVID M.J. TAX

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