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01/1994

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+4917665086536

Fuzhan Rahmanian

Fuzhan R

Fuzhan Rahmanian

SKILLS

Data Science

Data Management, Statistics, Linear algebra, Data visualization, Data wrangling

Programming Languages

Python, R, Julia, Protégé, PDDL

Frameworks

git, FastApi, Tensorflow, PyTorch, scikit-learn, matplotlib, plotly, numpy, pandas

Machine Learning

Supervised and unsupervised learning, active learning,

Deep Learning

CNNs, RNNs, GANs, XAI

Deep Reinforcment Learning

Monte Carlo, Q-Learning and DQN

Experimental Skills

SEM, AFM, FLIM, EDX, cell culture

LANGUAGES

Persian
Native Speaker

English
Fluent

German
B2 proficiency

Arabic
Elementary

Italian
Elementary

INTERESTS

Piano and classical music, puzzles, dancing and learning new languages

Fuzhan Rahmanian

WORK EXPERIENCE

Karlsruhe Institute of Technology (KIT) (01/2020 - Present)
PoLiS Cluster of Excellence
Doctoral Student

- Development of an automated material acceleration platform (MAP)
- Optimization of electrolyte formulations through active learning algorithms

Karlsruhe Institute of Technology (KIT) (04/2021 - 07/2021)
Tutor

- Tutoring the lecture *Machine learning and Data management for chemistry*

Ulm University - Neuro- and Media-Informatics Institute (12/2020 - 09/2022)
Research Assistant and Tutor

- Research & development of **Luna**, a Feature Visualization package for Tensorflow2 used in explainable AI (XAI)
- Tutoring the lectures of *Deep Learning for Graphics and Visualization* and *Computer-Vision I*

Ulm University - Mathematics Institute (09/2018 - 07/2021)
Tutor

- Assisting and tutoring of the lectures *Geometry*, *Analysis for Engineering and Computer Science*, *Applied discrete mathematics* and *Linear Algebra*

Ulm University - Experimental Physics / Biomechanics Institute (06/2017 - 02/2020)
Tutor and Research Assistent

- Tutoring the *Physics Praktika*
- Research in the design of a 'Lung-on-chip'
- Research in Viscoelasticity of knee-joint tissue

EDUCATION

Karlsruhe Institute of Technology (KIT) (01/2020 - Present)
PhD, Robotics and Automation Engineering

The University of Huddersfield (09/2019 - 09/2021)
Master of Sciance, Artificial Intelligence — 0.8 With Distinction - (Sehr Gut)

Thesis: *Outlier treatment and efficient synthetic data generation for heart failure prediction*

Ulm University (11/2016 - 06/2019)
Master of Sciance, Biophysics — 1.4 - (Gut)

Thesis: *Functionalizing of cantilever in AFM for Biophysical applications*

Ulm University (11/2016 - 06/2019)
Master of Sciance, Advanced Materials — 1.6 - (Gut)

Amirkabir University of Technology - Tehran Polytechnic (12/2012 - 12/2016)
Bachelor of Engineering, Biomedical/Medical Engineering — 16.90/20 - (Gut)

Thesis: *Synthesis and characterization of silver dopped in HA-Akermanite nanocomposite*

PROJECTS

Modular and Autonomous Data Analysis Platform (MADAP) (04/2022 - Present)
Research project

- Designing a python package with GUI for analyzing and visualizing electrochemical datasets

Hierarchical Experimental Laboratory Automation and Orchestration (HELAO) (02/2020 - 08/2021)
Laboratory Automation Framework

- Developed a Web-based A-synchronous platform for integrating combinatorial synthesis, high-throughput characterization, automatic analysis, machine learning and data management
- Actively used for running closed loop optimization on multiple instruments without human intervention

Rigorously testing Feature Visualization (11/2020 - 08/2022)
Research project

- Translation of the lucid package developed by OpenAI Microscope from tensorflow_v1 to v2
- Capable of analyzing any tensorflow models and visualize their neurons, channels, layers, and output layers

Outlier treatment and efficient synthetic data generation for heart failure prediction (12/2020 - 08/2021)
Master Thesis

- Applied data mining and cleaning methods for outlier detection, dimensional reduction, and feature selection
- Performed data augmentation techniques including, SMOTE, Adasyn and cGAN
- Built reliable ML algorithm for medical decision-making support

EXTRACURRICULAR ACTIVITIES

Udacity Nanodegrees

AI programming with Python, Machine learning, Deep learning, Deep Reinforcement Learning, Data science

Coursera

Machine learning, Covolutional Neural Network, Tensorflow,Object-Oriented-Programming

Management Workshops

Project management course provided by Hector School of Engineering and Management, part of the MBA Program of KIT

AWARDS & CONFERENCES

The Chancellor's Prize for Outstanding achievement by a postgraduate student (03/2022)
University of Huddersfield: Sir George Buckley (Chancellor)

The Departmental Prize for the Best Overall Performance on Postgraduate study in the Computer Science Department (03/2022)
University of Huddersfield: School of Computing and Engineering

The Departmental Prize for the Best Postgraduate Project in the Computer Science Department (03/2022)
University of Huddersfield: School of Computing and Engineering

STIBET scholarship (10/2018)
DAAD (German Academic Exchange Service)

Interview and published article by "Südwest Presse" (01/2018)
Südwest Presse

Presentation: "AI Accelerated Asynchronous Experimentation for Battery Materials Discovery" (11/2021)
MRS Conference Boston

Presentation: "How can machine learning and autonomy accelerate chemistry?" (09/2020)
Chemical Science Symposium

Selected as Elite Student Rank (06/2012)
University Entrance Examination Committee in Mathematics and Physics

Ranked top 0.5% of all students applying to university

PUBLICATIONS

2022 - One-shot active learning for globally optimal battery electrolyte conductivity
Batteries & Supercaps

2022 - From materials discovery to system optimization by integrating combinatorial electrochemistry and data science
Current Opinion in Electrochemistry

2022 - Enabling Modular Autonomous Feedback-Loops in Materials Science through Hierarchical Experimental Laboratory Automation and Orchestration
Advanced Materials Interfaces

2021 - High-Throughput Experimentation and Computational Freeway Lanes for Accelerated Battery Electrolyte and Interface Development Research
Advanced Energy Materials

2021 The potential of scanning electrochemical probe microscopy and scanning droplet cells in battery research
Electrochemical Science Advanced

2021 - Data Management Plans: the Importance of Data Management in the BIG-MAP Project
Batteries & Supercaps

2016 - Synthesis and characterization of Silver-containing Sol-gel Derived Bioactive Glass Coating
Springer Journal

2015 - Nano biomaterials for bionic eye: Vision of the future
Elsevier