

IMAN DEZNABI

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EDUCATION

Ph.D. in Computer Science, University of Massachusetts Amherst (GPA 4/4) (Sep 2018 – Jan 2025)

M. Sc. in Computer Science, University of Massachusetts Amherst (Awarded Dec 2021)

Thesis title: Adaptive Deep Learning Models for Personalized Modeling of Heterogeneous Time-Series Data

M. Sc. in Computer Engineering, Bilkent University (GPA 4/4) (Sep 2015 – Jun 2018)

Thesis: DeepKinZero: Zero-Shot Learning for Predicting Kinase Phosphorylation Sites

B. Sc. in Information Technology Engineering, University of Tabriz (GPA 3.67/4) (Sep 2010 – Feb 2015)

Thesis title: Algorithmic music composition according to human feelings with Hidden Markov Models

WORK EXPERIENCE

Microsoft Research, Research for Industry Group, Researcher (Feb 2024 – Sep 2024)

- Designing and implementing **foundation deep-learning models for zero-shot microclimate forecasting**, improving **forecasting performance by 44%** in areas with no training data using **Graph Neural Networks (GNNs) and Retrieval Augmented Generation (RAG) models**.

Microsoft, Azure Core, Data Science Intern (Jun 2022 – Aug 2022)

- Developed and deployed an end-to-end system to **forecast hourly database requests and automatically scale the database servers, reducing costs by 27% and minimizing throttled requests**.

Kronos Incorporated (now UKG), Data Science Intern (Jun 2019 – Aug 2019)

- Enhanced **hierarchical forecasting** of customer store sales by **more than 60%** using **deep learning models**

ACADEMIC RESEARCH EXPERIENCE

University of Massachusetts Amherst, Research Assistant Amherst - MA

Information Fusion Lab (Sep 2018 – present)

- Created and executed novel models for **personalized multi-resolution, multi-modal time-series data** for a wide range of applications in **climate prediction, healthcare, and finance**.
- Developed CALM-Net, a state-of-the-art prediction model for **stress levels** using only **student smartphone sensor data**, introducing a novel personalization technique (**Nature Scientific Reports**).
- Developed a novel **Multi-Modal** deep learning technique setting **state-of-the-art performance** for in-hospital mortality prediction by combining **clinical notes with time series data**. (**ACL 2021 findings**).
- Developed MultiWave, a novel deep learning technique that **combines multi-resolution sensor data** for many time series tasks, setting **a new state-of-the-art and providing interpretability** (CHIL 2023).

Bilkent University, Research Assistant Ankara - Turkey

TastanLab (Sep 2015 – Aug 2018)

- Implemented **DeepKinZero**, the first **Zero-Shot learning model in computational biology**.
- Developed **Negative Association Rule mining** to find **driver mutations in cancer**.
- Designed and implemented a custom **Belief Propagation algorithm** for **inferring genome of a victim**.

TECHNICAL STRENGTHS

Computer Languages Python, Java, C#, Matlab, R, C, C++

Tools Pytorch, Tensorflow, Keras, Gluon, Spark, Hugging Face, Scikit-learn, LLMs

Database Management Microsoft SQL server, MySQL

Cloud Computing Azure, AWS

PUBLICATIONS

- **I. Deznabi**, P. Kumar, M. Fiterau “**Towards Resolution-Aware Retrieval Augmented Zero-Shot Forecasting**” Time Series in The Age of Large Models workshop NeurIPS (2024) - spotlight presentation
- **I. Deznabi**, Y. Lou, A. Shaw, N. Simsiri, T. Rahman, M. Fiterau “**Dynamic Clustering via Branched Deep Learning Enhances Personalization of Stress Prediction from Mobile Sensor Data**” Nature Scientific Reports (2024)
- **I. Deznabi**, P. Kumar, M. Fiterau “**Zero-shot micro-climate prediction with deep learning.**” Tackling Climate Change with Machine Learning workshop NeurIPS (2023)
- **I. Deznabi**, M. Fiterau “**MultiWave: Multiresolution Deep Architectures through Wavelet Decomposition for Multivariate Timeseries Forecasting and Prediction.**” Conference on Health, Inference, and Learning (2023).
- C.H. Fleming, **I. Deznabi**, Shauhin Alavi, Margaret C. Crofoot, Ben T. Hirsch et al. “**Population-level inference for home-range areas.**” Methods in Ecology and Evolution journal (2022).
- **I. Deznabi**, M. Iyyer, M. Fiterau, “**Predicting in-hospital mortality by combining clinical notes with time-series data**” ACL-IJCNLP (2021) Findings
- **I. Deznabi**, T. Motahar, A. Sarvghad, M. Fiterau, N. Mahyar, “**Impact of the COVID-19 Pandemic on the Academic Community: Results from a survey conducted at University of Massachusetts Amherst**” ACM (2020), Digital Government: Research and Practice, COVID-19 Commentary
- **I. Deznabi**, B. Arabaci, M. Koyuturk, O. Tastan. “**DeepKinZero: Zero-Shot Learning for Predicting Kinase-Phosphosite Interactions**” Bioinformatics Journal (2020) Also presented at the ICML 2020 Workshop on Computational Biology as a highlight paper
- A. Shaw, N. Simsiri, **I. Deznabi**, M. Fiterau, T. Rahman “**Personalized Student Stress Prediction with Deep Multitask Network**” ICML 2019, Adaptive and Multitask Learning Workshop
- R. Uppaal, B. Kucharski, BP. Singh, **I. Deznabi**, M. Fiterau, “**Multi-resolution Attention with Signal Splitting for Multivariate Time Series Classification**” ICML 2019, Time-Series Workshop
- **I. Deznabi**, BP. Singh, B. Narasimhan, B. Kucharski , R. Uppaal , A. Josyula, M. Fiterau, “**Multi-resolution Networks For Flexible Irregular Time Series Modeling (Multi-FIT)**” (Technical Report)
- **I. Deznabi**, A. Celik, O. Tastan, “**MEMNAR: Finding mutually exclusive mutations in cancer using negative association rule mining**” ISMB/ECCB Workshop on Machine Learning in Systems Biology (2017)
- **I. Deznabi**, M. Mobayen, N. Jafari, O. Tastan, and E. Ayday. “**An Inference Attack on Genomic Data Using Kinship, Complex Correlations, and Phenotype Information.**” IEEE/ACM Transactions on Computational Biology and Bioinformatics (2017)

ACADEMIC SERVICES AND OTHER ACHIEVEMENTS

- **Peer-Reviews:** - ICML 2024, 2020 - ICLR 2023 - JBHI 2023 - NeurIPS 2022, 2021 - ML4H 2019, 2018 - AISTATS 2018 - TCBB 2017
- Awarded the prestigious “**Thesis Writing Fellowship**” from Manning College of Information and Computer Sciences, UMass Amherst, Spring 2024.
- Ranked **second** in **B/S/H data mining contest** (Hackathon in Analytics for Production Excellence) in Istanbul, Turkey, May 2017.
- Ranked **second** in **Ankara Hack Fest** coding competition, Ankara, Turkey, May 2016.