

Mahdi Dehshiri

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Education

University of Tehran

MSc in Electrical and Biomedical Engineering

- GPA: 18.89/20

Tehran, Iran

2021 - Current

K. N. Toosi University of Technology

BSc in Electrical Engineering - Control Engineering

- GPA: 16.25/20 (2016 - 2021) & 17.69/20 (2018 - 2021)

Tehran, Iran

2016 - 2021

Research Interests

- Causal structures learning:** Causal discovery in the presence of a nonstationary environment, latent variables, and time-dependent mechanisms.
- Representation learning:** Identifiability, causal representation learning, blind source separation.
- Bayesian Statistics:** Variational Bayes, uncertainty estimation, Bayesian experimental design.
- Others:** Domain generalization, causal inference, interpretability, privacy, Bayesian non-parametric, temporal point process.

Publications

Brain effective connectome based on fMRI and DTI data: Bayesian causal learning and assessment

Abdolmahdi Bagheri, **Mahdi Dehshiri**, Yamin Bagheri, Alireza Akhondi-Asl, Babak Nadjari Araabi

Plos one 18.8 (2023) e0289406. Public Library of Science San Francisco, CA USA, 2023

Research Experience

Computational Modeling and Machine Learning Lab. at University of Tehran

Research Assistant

Tehran, Iran

2022 - Present

- Research, Implementation, and development on Causal Structure Learning methods e.g. GES, PC(using Kernel-based Conditional Independence Test), Golem, Notears, DAGMA.
- Solid theoretical background with hands-on experience on identifiable representation learning methods e.g. nonlinear ICA, iVAE(identifiable Variational Autoencoder), non-factorized-iVAE, CCL.
- Research and Implementation of domain generalization methods e.g. Causal Matching, SelfReg using domainbed.

Advanced Robotics and Automated Systems (ARAS) at K. N. Toosi University of Technology

Research Assistant

Tehran, Iran

2021 - 2022

- Sales Prediction of Kalana stores products using Random Forest(Lightgbm) and graphical user interface design(Tkinter) for the program.

Advanced Process Automation and Control (APAC) at K. N. Toosi University of Technology

Research Assistant

Tehran, Iran

2018 - 2020

- Alarm Management using Bidirectional LSTM for VS.94 Turbine(PyTorch).

Teaching Experience

Causal Inference and Learning

Lead Teacher Assistant

University of Tehran

2024

Upcoming Teaching Experience

Deep Generative Models

Teacher Assistant

University of Tehran

2023

Designing-Assessing Homework & Exam for Causality and PGM section

System Identification

Teacher Assistant

University of Tehran

2022

Homework assessment

Honores

- Among the top 2% of Iranian National B.Sc. entrance exam among 160,000 participants.
- Among the top 15% of Electrical Engineering Students at K. N. Toosi University, Tehran, Iran - 2021.
- Among the top 10% of Electrical and Biomedical Engineering Students at Tehran University - 2023.

Selected Courses

Graduate Courses

- Statistical Machine Learning - 19.7/20
- Machine Learning - 19.5/20
- Deep Learning & PGM - 18/20
- System Identification - 19/20
- Statistical Inference - 20/20
- Functional brain Imaging Systems - 20/20
- Stochastic Processes - 16.3/20
- 6.S091-causality- Informal Course Study

Under-Graduate Courses

- Fundamentals of Computer Vision - 20/20
- Fundamentals of Intelligent systems - 18.8/20
- Physiology 1 - 19/20
- Linear Algebra - 17.5/20

Selected Projects

Causal structure learning

- Brain effective connectome based on fMRI and DTI data using GOLEM & FGES(Tetrad-Java,py-causal), TensorFlow)(code).
- Causal Discovery in the presence of Prior Information using DAGMA(numpy) (code).

Causal represantion learning

- Classification of colored-MNIST Dataset using SCCL(Supervised Casual Contrastive Learning)(PyTorch)(code).
- Implementation of NF-iVAE(PyTorch)(code).

Statistical machine learning(course)

- Supervised Contrastive Learning & Dirichlet Process Mixture model on 102-Flowers Data(PyTorch) (code).
- Interpretability and Privacy on 102-Flowers Data(PyTorch)(code).
- Open-Set Recognition of 102-Flowers Data(PyTorch)(code).

Other courses projects

- Sensitivity Analysis and Design of Alarm System Based on Delay Timer Considering Measurement Errors.
- Classification of Names and IDs on Handwritten Pages using Image-Processing & Deep CNN.
- Classification and Clustering of Music Genres.

Skills

Programming Python, R, C, Matlab

Miscellaneous Linux, \LaTeX (Overleaf), Simulink, Git, Arduino, Microsoft Office

Languages

English TOEFL in November

Farsi Native proficiency

References

- Prof. Hamid Soltanian-Zadeh, School of Electrical and Computer Engineering, University of Tehran
Email: hszadeh@ut.ac.ir
- Prof. Babak Nadjar Araabi, School of Electrical and Computer Engineering, University of Tehran
Email: araabi@ut.ac.ir
- Prof. Hamidreza Taghirad, Faculty of Electrical Engineering, K. N. Toosi University of Technology
Email: Taghirad@kntu.ac.ir
- Dr. Abdolmahdi Bagheri, School of Electrical and Computer Engineering, University of Tehran
Email: abdolmahdibagheri@ut.ac.ir