Mahdi Dehshiri

+989137799512 | mhdhshri@gmail.com | mhdehshiri.github.io | github.com/mhdehshiri | linkedin.com/in/mehdi-dehshiri

Education

University of Tehran *Tehran, Iran*

MSc in Electrical and Biomedical Engineering *Oct. 2021 - Current*

- GPA: 18.58/20

K. N. Toosi University of Technology *Tehran, Iran*

BSc in Electrical Engineering - Control Engineering *Sep. 2016 - Jul. 2021*

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

Research Interests

- **Causal Structure Learning, Representation Learning, Experimental Design, Identifiability, Baysian statistics, eXplainable AI**

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 Nadjar Araabi

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

Algorithmic Identification of Essential Exogenous Nodes for Causal Sufficiency in Brain Networks

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

Submitted to the Medical Image Computing and Computer-Assisted Intervention (MICCAI) conference (2024). 2024

*Equal contributions.

Research Experience

Computational Modeling and Machine Learning Lab. at University of Tehran *Tehran , Iran*

Research Assistant *Jan. 2022 - Present*

- Solid theoretical background with hands-on experience on Identifiability and causal representation learning methods.
- Research, Implementation, and development on Causal Structure Learning methods.
- Research and Implementation of causality inspired domain generalization methods.

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

Research Assistant *June 2021 - Jan. 2022*

- Sales Prediction of Cluna stores products using Random Forest.

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

Research Assistant *June 2018 - Dec. 2020*

- Alarm Management using Bidirectional LSTM for VS.94 Turbine.

Teaching Experience

Trustworhty ML *University of Tehran*

Teacher Assistant *Jan. 2024 - present*

Designing-Assessing Homework & Exam for Causality, and Privacy sections, Presentation on Causal Algorithmic Recourse

Deep Generative Models *University of Tehran*

Teacher Assistant *Sep. 2023 - Dec. 2023*

Designing-Assessing Homework & Exam for Causality and PGM section

System Identification *University of Tehran*

Teacher Assistant *Jan. 2022 - June 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
- Statistical Inference - 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
- Numerical Methods - 20/20
- 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)(code).
- Algorithmic Identification of Essential Exogenous Nodes for Causal Sufficiency in Brain Networks(code).
- Causal Discovery in the presence of Prior Information using DAGMA(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**(PyTorch, TensorFlow, Lightgbm, NumPy, Pandas, Matplotlib, Tkinter, PyInstaller, etc.)**, R**(dply, tidyr, ggplot2, etc.)**, C, Matlab**
Miscellaneous	**Linux, LaTeX(Overleaf),Simulink, Git, Arduino, Microsoft Office**

Languages

English	93 TOEFL (Reading: 25, Listening: 27, Speaking: 21, Writing: 20)
Farsi	Native proficiency

References

- Dr. Alireza Akhondi-Asl, Assistant Professor at Harvard Medical School
  Email: Alireza.Akhondi-Asl@childrens.harvard.edu
- Dr. Babak Nadjar Araabi, Professor at School of Electrical and Computer Engineering, University of Tehran
  Email: araabi@ut.ac.ir
- Dr. Hamidreza Taghirad, Professor at Faculty of Electrical Engineering, K. N. Toosi University of Technology
  Email: Taghirad@kntu.ac.ir
- Dr. Mostafa Tavassolipour, Assistant Professor at School of Electrical and Computer Engineering, University of Tehran
  Email: tavassolipour@ut.ac.ir