Alireza Ganjdanesh

+1(412)610-3707 | aliganj@umd.edu | alii-ganjj.github.io | Alii-Ganjj | alireza-ganjdanesh

RESEARCH INTERESTS

Computer Vision | Efficient Deep Learning | Generative Modeling
Interpretable Machine Learning | Medical Image Analysis

EDUCATION

University of Maryland, College Park — Sep. 2023 - Present
PhD in Computer Science — *College Park, MD*
· Advisor: Heng Huang

University of Pittsburgh — Aug. 2019 - Aug. 2023
PhD in Electrical and Computer Engineering — *Pittsburgh, PA*
· Advisor: Heng Huang

University of Tehran — Sep. 2014 - May 2019
B.Sc. in Electrical Engineering — *Tehran, Iran*
· GPA: 3.99/4.00 (18.84/20) - **ranked 4th among 148 students (top 3%)**

PUBLICATIONS

EffConv: Efficient Learning of Kernel Sizes for Convolution Layers of CNNs

*Proceedings of the Association for the Advancement of Artificial Intelligence (**AAAI 2023**)*
Alireza Ganjdanesh, Shangqian Gao, Heng Huang.

Interpretations Steered Network Pruning via Amortized Inferred Saliency Maps

*European Conference on Computer Vision (**ECCV 2022**)*
Alireza Ganjdanesh, Shangqian Gao, Heng Huang.

Efficient Diffusion Models Through Mixture of Efficient Experts

Under Review, 2023
Alireza Ganjdanesh, Yan Kang, Yuchen Liu, Richard Zhang, Zhe Lin, Heng Huang.

Compressing Image-to-Image Translation GANs Using Local Density Structures on Their Learned Manifold

Under Review, 2023
Alireza Ganjdanesh, Shangqian Gao, Hirad Alipanah, Heng Huang.

Jointly Training and Pruning CNNs via Learnable Agent Guidance and Alignment

Under Review, 2023
Alireza Ganjdanesh, Shangqian Gao, Heng Huang.

A Fully Differentiable Framework for Three-Dimensional Network Pruning

Under Review, 2023
Shangqian Gao, **Alireza Ganjdanesh**, Zeyu Zhang, Yanfu Zhang, Feihu Huang, Heng Huang.

Multi-modal Genotype and Phenotype Mutual Learning to Enhance Single-Modal Input Based Longitudinal Outcome Prediction

*26th International Conference on Research in Computational Molecular Biology (**RECOMB 2022**)*
Alireza Ganjdanesh, Jipeng Zhang, Wei Chen, Heng Huang.

LONGL-Net: Temporal Correlation Structure Guided Deep Learning Model to Predict Longitudinal Age-related Macular Degeneration Severity

*Proceedings of the National Academy of Sciences (**PNAS Nexus**)*
Alireza Ganjdanesh, Jipeng Zhang, Emily Y. Chew, Ying Ding, Wei Chen, Heng Huang.

Predicting Potential Propensity of Adolescents to Drugs via New Semi-supervised Deep Ordinal Regression Model

*International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI 2020**)*
Alireza Ganjdanesh, Kamran Ghasedi, Liang Zhan, Weidong Cai, Heng Huang.

EXPERIENCE

Research Scientist/Engineer Intern May 2023 - Nov 2023
Adobe Research *Seattle, WA*

- Mentors: Yan Kang, Yuchen Liu, Richard Zhang, Zhe Lin
- I worked on developing a pruning technique for latent diffusion models for image generation and editing. We proposed a method to cluster denoising time-steps of a diffusion model into several clusters and trained an expert for each interval. Then, we developed a pruning framework in which we prune all the experts together to obtain a mixture of efficient experts. Our pruned model outperformed a recent baseline, **OMS-DPM**, in terms of both sample quality and sample generation throughput. We submitted our work to CVPR 2024.

Deep Learning Intern May 2021 - Aug 2021
Enlitic Inc. *San Francisco, CA*

- Mentors: Amir Tahmasebi, Konstantin Dmitriev
- Designed a new multi-label classification model capable of leveraging visual and characteristic similarity of the disease during training to enhance the model's performance. Moreover, in close collaboration with Enlitic's radiology team, I designed a new augmentation pipeline that mimics the lightning situation that radiologists use in their daily decisions for each disease. The pipeline improved model training and the final model's accuracy.

Graduate Research Assistant August 2019 - Aug 2023
University of Pittsburgh *Pittsburgh, PA*

- Worked on theoretical and application aspects of deep learning and computer vision namely model compression and pruning, generative modeling, interpretability, and medical image analysis.
- Frameworks that I used: PyTorch, Tensorflow, PyTorch Lightning, NumPy, Pandas, MATLAB.

TECHNICAL SKILLS

Programming Languages	Python, Java , MATLAB, C/C++
Deep Learning & ML	PyTorch, TensorFlow, Scikit-learn, Keras
Tools	Git, Vim, Jupyter, Tmux, LaTeX

HONORS AND AWARDS

Winner of MICCAI 2020 NIH Award 2020
International Conference on Medical Image Computing and Computer Assisted Intervention

Ranked 4th among 148 (Top 3%) B.Sc. Electrical Engineering Students 2019
University of Tehran

Winner of FOE (Faculty Of Engineering) Award 2018
A certificate awarded to excellent students in two successive semesters in one year, University of Tehran

Entrance Exam Exemption for Graduate Studies in Electrical Engineering 2017
An opportunity awarded to top 10% of Electrical Engineering students of University of Tehran

PROFESSIONAL SERVICES

- Reviewer for KDD 2020, CIKM 2021, ICLR 2023, CVPR 2023, ICCV 2023, AAAI 2023, TNNLS (2023), and American Journal of Human Genetics (AJHG) (2020).
- Research Track Program Committe Member of KDD 2020.

REFERENCES

- **Heng Huang**
  Brendan Iribe Endowed Professor
  · Department of Computer Science
  · ECE Department
  · University of Maryland, College Park
  · ✉ heng@umd.edu

- **Wei Chen**
  Professor of Pediatrics
  · Department of Pediatrics
  · Department of Biostatistics
  · University of Pittsburgh
  · UPMC Children's Hospital of Pittsburgh
  · ✉ wei.chen@chp.edu