REZA ABBASI

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RESEARCH INTERESTS

- Multimodal learning
- Out Of Distribution Generalization
- Explainability

EDUCATION

Master of Science in Computer Engineering   *Sep 2021 - Sep 2024*

Department of Computer Engineering, Sharif University of Technology (SUT), Tehran, Iran

GPA: 4.00/4.00

Thesis: Medical Image Retrieval with Self-Supervised Models

Supervisor: Dr. Mohammad Hossein Rohban

Bachelor of Science in Computer Engineering   *Sep 2016 - Dec 2020*

Department of Computer Engineering, Isfahan University of Technology (IUT), Isfahan, Iran

GPA: 3.61/4.00

Supervisor: Dr. Hossein Falsafain

PUBLICATIONS

- **Conference:**

  - **Abbasi R.**, Nzari A., Sefid A., Banayeeanzade A., Rohban M., Soleymani Baghshah M. *CLIP Under the Microscope: A Fine-Grained Analysis of Multi-Object Representation*. **Accepted** to CVPR 2025. View Paper

  - **Abbasi R.**, A., Rohban M., Soleymani M. *Deciphering the Role of Representation Disentanglement: Investigating Compositional Generalization in CLIP Models*. **Accepted** at ECCV 2024. View Paper.

  - Abdollahi A., Ghaznavi M., Karimi M., Oriyad A., **Abbasi R.**, Salesi A., Behjati M., Rohban M., Soleymani M. *GABInsight: Exploring Gender-Activity Binding Bias in Vision-Language Models*. **Accepted** at ECAI 2024 .View Paper.

  - Khattak M. U., Kim W. J., **Abbasi R.**, Murphy M., Zadeh A., Li C., Kar O. F., Naeem M. F., Atanov A., Bachmann R., Tombari F., Zamir A. *Any-to-Any Video Modeling in Multimodal Abstract Spaces*. **Submitted** to CVPR 2026.

- **Workshop:**

  - **Abbasi R.**, Nzari A., Sefid A., Banayeeanzade A., Rohban M., Soleymani Baghshah M. *Analyzing CLIP's Performance Limitations in Multi-Object Scenarios: A Controlled High-Resolution Study*. **Accepted** at EVAL-FoMo 2024, ECCV Workshop.

  - **Abbasi R.**, Sameie M., Rohban M., Soleymani Baghshah M. *The Critical Role of Language in the Compositional Generalization of CLIP*. **Accepted** at OOD-CV, ICCV Workshop. View Paper

  - Azizmalayeri M.*, **Abbasi R.***, Haji Mohammad rezaie A.*, Zohrabi R.*, Amiri M., Taghi Manzuri M., Rohban M. *Spuriosity Rankings for Free: A Simple Framework for Last Layer Retraining Based on Object Detection*. **Accepted** at SCIS, ICML Workshop. View Paper

- **Journal:**

  - Marioriyad A., Banayeeanzade A., **Abbasi R.**, Rohban M., Soleymani Baghshah M. *Attention Overlap Is Responsible for The Entity Missing Problem in Text-to-image Diffusion Models!*. **Accepted** at TMLR.

  - Pirayesh Z., Rahimi H., Motamedian R., Afshar S., **Abbasi R.**, Rohban M., Mahdian M., Ahsaie M., Alamdari M. *A Hierarchical Deep Learning Approach for Diagnosing Impacted Canine-Induced Root Resorption via CBCT*. **Accepted** at Journal of Endodontics. View Paper

  - Rahimi H., Dianat O., **Abbasi R.**, Zahedrozegar S., Ashkan A., Motamedian S., Rohban M., and Nosrat A. *Artificial Intelligence for Detection of External Cervical Resorption Using Label-Efficient Self-Supervised Learning Method*. **Accepted** at BMC Oral Health. View Paper

– Nazari A., Najafi S., **Abbasi R.**, Rahimi H., Motie P., Alamdari M., Hosseinzadeh M., Pauwels R., Schwendicke F *High-Resolution Dentomaxillofacial Cone-Beam Computed Tomography using Deep Learning-based Super-Resolution: A Pilot Study*. **Accepted** at Imaging Science in Dentistry.

RESEARCH EXPERIENCE

Associate Professor Mohammad Hossein Rohban　　　　　　*Jan 2022 – Sep 2024*
Sharif University of Technology, Tehran, Iran
– Performed data analysis and algorithm development for complex pattern-recognition tasks. Mentored eight undergraduate students through project planning, implementation, and result interpretation.

Associate Professor Mahdieh Soleymani Baghshah　　　　　　*Sep 2022 – Sep 2024*
Sharif University of Technology, Tehran, Iran
– Conducted evaluation and performance analysis of multimodal representation models. Designed and executed extensive experiments, delivering actionable insights on model capabilities.

PhD Student Hossein Mohammad-Rahimi　　　　　　*Mar 2022 – Apr 2024*
Shahid Beheshti University, Tehran, Iran
– Collaborated with the medical department on self-supervised techniques for diagnostic applications. Specialized in classification and segmentation of dental datasets, enhancing diagnostic accuracy.

TEACHING EXPERIENCE

Teaching Assistant　　　　　　*Sep 2022 - June 2023*
Course: Artificial Intelligence, Sharif University of Technology
Supervisor: Dr. Mahdieh Soleymani Baghshah

Teaching Assistant　　　　　　*Sep 2022 - June 2023*
Course: Machine Learning, Sharif University of Technology
Supervisor: Dr. Ali Sharifi-Zarchi

Teaching Assistant　　　　　　*Aug 2020 - Dec 2020*
Courses: Data Warehouse & Database Lab, Isfahan University of Technology
Supervisor: Dr. Alireza Basiri

SKILLS

Programming Languages:	Python, C, C++, T-SQL, R, Matlab
Machine Learning Libraries:	PyTorch, scikit-learn, NumPy, Pandas,OpenCV, Keras, spaCy
Database Management:	SQL (MS SQL, SQLite), NoSQL (MongoDB)
Development and Technical Tools:	Django, Flask, FastAPI, Vuejs, Recatjs,Nuxtjs, Qt, Express.js, Git, LaTeX
Operating Systems:	Windows, Linux, macOS

SELECTED PROJECTS

Histopathology Retrieval using CLIP
GitHub Link
Trained a CLIP model histopathology image Retrieval. Utilized ChatGPT to condense medical reports into concise descriptions, paired with images for model training.

Composed Image Retrieval with CLIP
GitHub Link
This project utilizes CLIP's Image Encoder and Text Encoder as backbones to train a model using contrastive learning for composed image retrieval.

CLIP Evaluation on Compositional OoD
GitHub Link
Conducted comprehensive evaluations on compositional benchmarks to assess the strengths and weaknesses of large vision-language models.