Ahmad **Salimi**

Deep Learning Research and Development Intern · Computer Science Graduate Student

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Experience

Research and Development Intern - Deep Learning

Feb. 2025 – Present

Ubisoft La Forge — *Toronto, Canada*

- Research on generative models for speech-driven face animation generation using mesh-based facial data
  - Focused on controllability of diffusion models to stylize generated animations using style example clips, aiming to enable the generated animation to mimic the underlying style (in progress)
  - Utilizing k-sparse autoencoders for the stylization task, enabling the ability to discover, extract, and transfer style features
  - Developing and training speech2face diffusion and flow models using score matching and flow matching for enhanced high-quality animation generation (in progress)

Research Assistant - Computer Vision and Deep Learning

Sep. 2023 - Present

Lassonde School of Engineering, York University — *Toronto, Canada*

- Research at CVIL Lab - Under the supervision of Prof. Konstantinos G. Derpanis (🎓scholar): Generative Modeling, especially Diffusion Models and their controllability in the context of 3D Vision
  - Master's thesis title: Geometry-Aware Diffusion Models for Multiview Scene Inpainting (to be defended soon)
  - A paper based on this work has been accepted at BMVC 2025
  - Designed, implemented, and trained a geometry-aware diffusion model to inpaint 3D scenes, by fine-tuning Stable Diffusion for inpainting, achieving state-of-the-art performance with an increase of 17% in FID and 10% in 3D consistency compared to previous NeRF- and Gaussian Splatting-based methods. Utilized mesh rendering as a key step in the inpainting algorithm. Optimized model performance through hyperparameter tuning and distributed training. Worked with PyTorch, PyTorch Lightning, Diffusers, PyTorch3D, Kornia, NeRF Studio, Weights & Biases, etc.
- Teaching Assistantship
  - Computer Vision, Fall 2024: Lab tutorial and grading
  - Advanced Object-oriented Programming, Fall 2023, Winter and Fall 2024, Winter 2025: Lab tutorial and grading

Machine Learning Engineer

Oct. 2022 - May. 2023

Hasti Innovative Trading — *Tehran, Iran*

- Fully Automated Pipeline for Training Deep Learning Models
  - Designed and implemented scalable data pipelines to create datasets, train models on GPU clusters, and deploy results in production using Docker, PyTorch, PyTorch Lightning, and DVC, decreasing development, training, and deployment time by 90%
- Train and Deploy Deep Models
  - Designed and implemented a service-oriented multi-modal search engine for a large collection of e-commerce online marketplaces, compatible with multi-modal documents and queries
  - Fine-tuned OpenAI CLIP for domain adaptation with 9 million training samples
  - Trained a zero-shot vision-language Transformer-based model to build a session-based recommendation system
  - Developed several microservices with the internal and external APIs using gRPC and gRPC gateway in GoLang and Python
  - Adopted Milvus for fast vector retrieval
  - Deployed the models in Kubernetes, equipped with GPU for inference

Research Assistant - Deep Learning

Jun. 2021 - Apr. 2022

EPFL — *Lausanne, Switzerland (Remote)*

VITA Lab - Under the supervision of Prof. Alexandre Alahi (🎓scholar)

- Designed and developed a general PyTorch-based framework to merge any vehicle trajectory prediction datasets and adapted them to a model
- Merged and standardized three vehicle trajectory datasets
- Enhanced the generalization of vehicle motion predictions by training them on multiple existing datasets

Research Assistant - Computer Vision and Deep Learning

Aug. 2020 - Jul. 2022

AI-Med, Sharif University of Technology — *Tehran, Iran*

Under the supervision of Prof. Hamid R. Rabiee

- Researching Computer-Aided Medical Diagnosis Systems
  - Worked on the interpretability of Computer-Aided Medical Diagnosis Systems
  - Published a book chapter at Springer titled "COVID-19 Diagnosis with Artificial Intelligence". Designed, implemented, and executed the experiments related to the proposed guideline to develop AI models for diagnosis and screening
  - Worked on my Bachelor's thesis titled "Enhancing Interpretability: A Versatile Clue-Based Framework for Faithful In-Depth Interpretations and Knowledge Injection"
- Coordination of Scientific Internship Programs

Software Engineer

Jun. 2019 - Aug. 2020

Mohaymen ICT — *Tehran, Iran*

- Designed a custom RPC framework for inter-microservice APIs and implement them in C#, JavaScript, and TypeScript
- Designed and implemented a general graph pattern matching microservice that works with multiple databases such as SQL Server, Oracle SQL, Elasticsearch, …

Education

York University — *Toronto, Canada*

Master of Science in Computer Science — *Sep. 2023 - Oct. 2025*

- GPA: 3.92/4.0

Sharif University of Technology — *Tehran, Iran*

Bachelor of Science in Computer Engineering — *Sep. 2018 - May 2023*

- GPA: 18.15/20

Peer-Reviewed Publications

Conference Proceedings

- Ahmad Salimi, Tristan Aumentado-Armstrong, Marcus A. Brubaker, Konstantinos G. Derpanis. "Geometry-Aware Diffusion Models for Multiview Scene Inpainting". Accepted at the British Machine Vision Conference, BMVC 2025.

Book Chapters

- Rassa Ghavami Modegh, Ahmad Salimi, Sepehr Ilami, et al. "COVID-19 Diagnosis with Artificial Intelligence". In: "The Science behind the COVID Pandemic and Healthcare Technology Solutions". Springer Series on Bio- and Neurosystems. 2022.

Submitted Papers

- Rassa Ghavami Modegh, Ahmad Salimi, Alireza Dizaji, Hamid R. Rabiee. "Enhancing Interpretability: A Versatile Clue-Based Framework for Faithful In-Depth Interpretations and Knowledge Injection". Submitted to Elsevier's Journal of Pattern Recognition.

Honors & Awards

2023	**VISTA scholarship - $10,000/year for two years**, VISTA, York University	*Toronto, Canada*
2023	**Vector scholarship in AI - $17,500**, Vector Institute for AI	*Toronto, Canada*
2018	**9th Rank among 150k participants**, Iranian National Math-Physics University Entrance Exam	*Iran*
2017	**Gold Medal**, 8th Iranian High School Nanotechnology Olympiad	*Qazvin, Iran*

Skills

Generative Modeling	Diffusion Models • Score Matching • Flow Matching • k-Sparse Autoencoders
Deep Learning Frameworks	PyTorch • PyTorch Lightning • HuggingFace • Diffusers • TensorFlow 2
ML/Data Tools	DVC • MLFlow • Weights & Biases • Pandas • PySpark • scikit-learn
Programming	Python • Go • JavaScript • TypeScript • Java • C • C++ • Flask • Django • gRPC • REST
3D Vision	NeRFs • Gaussian Splatting • PyTorch3D • NeRF Studio
Computer Vision, Graphics	Kornia • OpenCV • Computational Geometry • Mesh Processing
Data Engineering	SQL • MongoDB • Redis • Elasticsearch • Milvus • DocArray
DevOps, Cloud	Docker • Kubernetes • AWS • Nginx • Grafana • Ansible • Prometheus • CI/CD • Linux • Git
Software Engineering	OOD • Design Patterns • Clean Code • Refactoring