Baktash Ansari

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Education

University of Washington, Bothell, WA *(Sep 2025 – Present)*
Master of Science in Computer Science; Specialization: AI + Machine Learning

Iran University of Science & Technology, Tehran *(Oct 2020 – Jul 2024)*
Bachelor of Science in Computer Engineering; Specialization: AI + Machine Learning
GPA: 3.92/4.0

Research Interests

- Natural Language Processing
- Vision-Language Learning
- LLM & VLM Reasoning
- Information Retrieval

Publication (Google Scholar)

- **Ansari B.**, Ali S., Mashhadi A. "ToxiTwitch: Hybrid Dynamic Model for Toxicity Detection in Twitch" – **Under-Review-2025**
- Rostamkhani M., **Ansari B.**, Sabzevari H., et al. "Illusory VQA: Benchmarking and Enhancing Multimodal Models on Visual Illusions" – Accepted at MAR – **CVPR 2025**
- Rostamkhani M., **Ansari B.**, Sabzevari H., et al. "Illusory VQA: Benchmarking and Enhancing Multimodal Models on Visual Illusions" – Accepted as **Spotlight Paper** at MAR – **NeurIPS 2024**.
- **Ansari B.**, Rostamkhani M., Eetemadi S. "BAMO at SemEval-2024 Task 9: BRAINTEASER" – Published in Proceedings of the 18th International Workshop on Semantic Evaluation (**SemEval-2024**) at **NAACL 2024**
- Azadi A., **Ansari B.**, Zamani S. "Bilingual Sexism Classification: Fine-Tuned XLM-RoBERTa and GPT-3.5 Few-Shot Learning" – Published in Proceedings of **CLEF 2024 – EXIST Lab**.

Research Experience

Graduate Research Assistant | *University of Washington, Bothell, WA* *(March 2025 – Present)*
- Fine-tuned **information retrieval models** (e.g., Contriever) with *TopicTune*, boosting **Llama** and **GPT** accuracy on open-domain Reddit and Lemmy data by **10%**.
- Applied **reinforcement learning** with **LLM feedback** for retrieval optimization and **Mixture of Experts (MoE)** generation.
- Implemented **prompt-tuning** on **DeepSeek** and **Llama** for **toxicity detection** in Twitch chat.
- Researched **content moderation** and **Theory of Mind reasoning** in LLMs across Reddit and Twitch domains.
- Built **multi-GPU PyTorch pipelines** for inference, analysis, and evaluation using **Python**, **NumPy**, and **Pandas**.

Research Assistant | *Michigan State University, Remote* *(Aug 2025 – Present)*
- Designed a **Neuro-Symbolic Pipeline** integrating **Symbolic Reasoning** with **LLMs** to solve **abductive reasoning** tasks on complex visual datasets.
- Trained **CLIP** models using **contrastive learning** for enhanced visual-text alignment in reasoning systems.

Research Assistant | *IUST, Tehran* *(July 2023 – Aug 2024)*
- Designed **3 pipelines** to evaluate LLMs and Transformer-based models on the **SemEval-2024** Task 9 dataset, including Multi-Agent Debate, Chain of Thought Prompting, and Fine-tuning, achieving **85% accuracy**.
- Developed methods for **sexism detection** through Prompt Engineering and Fine-tuning transformer-based models, securing **4th place** in Task 1 and **2nd place** in Task 2 at **CLEF 2024 – EXIST Lab**.
- Generated **4 unique image datasets** with **4,000+ samples each** using Stable Diffusion to create a benchmark for evaluating and **fine-tuning 3 multimodal models** and **1 generative model** (Gemini, GPT-4o, CLIP, BLIP) with PyTorch and Hugging Face, achieving **10%+ performance improvement** through novel image processing methods.

Teaching Experience

Teaching Assistant | *Iran University of Science & Technology (IUST), Tehran* *(Fall 2021 – Spring 2024)*
- Assisted in the following courses under multiple professors:
  - Natural Language Processing – Prof. Marzieh Davoodabadi
  - Algorithms Design & Analysis – Prof. Farzaneh Ghayour Baghbani
  - Systems Design & Analysis (Software Engineering I) – Prof. Mehrdad Ashtiani
  - Introduction to Artificial Intelligence – Prof. Mohammad Reza Mohammadi

- Algorithms Design & Analysis – Prof. Marzieh Malekimajd
- Introduction to Competitive Programming – Prof. Sauleh Eetemadi
- Data Structures – Prof. Hossein Rahmani
- Logical Circuits – Prof. Hosseini Monazzah
- Discrete Mathematics – Prof. Vesal Hakami
- Fundamentals of Computer Programming (C++) – Prof. Mehrdad Ashtiani
- Fundamentals of Computer Programming (C++) – Prof. Reza Entezari Maleki
- Fundamentals of Computer Programming (Python) – Prof. Tayebeh Rafiei

Python/C++ Programming Instructor | *Tehran* *(July 2021 – Sep 2021)*

- Taught basic and professional **Python** and **C++** programming concepts to over **30 middle and high school students**, using interactive examples and storytelling.
- Designed and delivered lessons on **algorithmic thinking** to improve students' problem-solving and coding skills.

Relevant Courses

University of Washington *(University Courses)*

- Machine Learning (Prof. Dong Si) Attending
- Advanced Computer Vision (Prof. Clark Olson) Attending

Iran University of Science & Technology (IUST) *(University Courses)*

- Natural Language Processing (Based on Stanford CS224n Course) [GitHub] A+
- Computational Intelligence [GitHub] A
- Deep Learning [GitHub] A+
- Artificial Intelligence (Based on UC Berkeley CS188 Course) [GitHub] A+
- Algorithms Design & Analysis A+
- Data Structures A+
- Database Design A+
- Systems Design & Analysis A+
- Software Engineering A+
- Operating Systems A+
- Theory of Languages and Automata A+
- Introduction to Programming Contests A+

Machine Learning and NLP Specialization *(Coursera Certificates)*

- Supervised Machine Learning: Regression and Classification [Certificate]
- Advanced Learning Algorithms [Certificate]
- Natural Language Processing with Probabilistic Models [Certificate]
- Natural Language Processing with Classification and Vector Spaces [Certificate]

Selected Projects

Age-Rating Movies Classification based on Subtitles *Source Code*

- Designed for an NLP university course based on Stanford's CS224N.
- Developed a language model to classify movie subtitles by age rating, supporting content filtering for families and producers.
- Collected and cleaned noisy data by crawling IMDb and OpenSubtitles; defined the project scope independently.
- Implemented data preprocessing, feature extraction, and model training on multilingual data (English and Persian).

Persian Emotion Detection using ArmanEmo Dataset *Source Code*

- Preprocessed and cleaned the ArmanEmo dataset using tokenization, lemmatization, and normalization.
- Fine-tuned ParsBERT and XLM-RoBERTa Large; published trained models on Hugging Face.
- Evaluated models on unseen data for accuracy and additional metrics.
- Conducted multimodal classification with the MVSA dataset, extracted ResNet features, and trained an MLP model.

BAMO at SemEval 2024 (Published Paper) *Source Code*

- Led the team and managed all technical aspects and evaluations.
- Fine-tuned two transformer-based models for reasoning tasks.
- Applied chain-of-thought prompting to derive diverse LLM inferences.
- Implemented multi-agent debates using the ReConcile technique with three distinct LLMs.

Naive Bayes Classifier for 3-Label Sentiment Classification *Source Code*

- Proposed and developed as an educational AI course project while serving as Teaching Assistant.
- Implemented a Naive Bayes classifier for three sentiment labels: Positive, Negative, and Neutral.
- Extended from binary to multi-label classification and evaluated on real datasets.

Pendulum Problem Solution using Fuzzy Control System *Source Code*

- Created for a Computational Intelligence course using fuzzy control systems.
- Designed one of the top-performing solutions among peers for pendulum stabilization.
- Simulated fuzzy control rules to model pendulum dynamics effectively.

TrekDestiny – Travel Platform Web Application *Source Code*

- Led a team of three students to build a travel platform with authentication, real-time chat, notifications, and blog sections.
- Developed the front-end using React and Tailwind CSS; handled bug fixing and maintenance through each sprint.
- Managed CI/CD for front-end integration and guided less experienced teammates technically.
- Oversaw project development using Scrum methodology, conducting sprints, stand-ups, and retrospectives.

Technical Skills

Languages: C++, Python, C, Java, JavaScript, React Native, SQL, C#, HTML, CSS, Bash

Technologies: AI, NLP, Computer Vision, Neural Network, RL, Deep Learning, Information Retrieval, Generative AI, Fine-tuning, Neuro-Symbolic Reasoning, Few-shot Learning, LLM Reasoning, Model Tuning, App Development, PyTorch, CUDA, NumPy, TensorFlow, NumPy, Pandas, OpenCV, Scikit, Git, Linux, Matplotlib, HuggingFace, Kaggle

Relevant Courseworks: Algorithm Analysis, Data Structure, Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, Artificial Intelligence, Systems Programming, Computer Architecture, Probability & Statistics

Honors

Top Student of the Computer Engineering Department | *IUST* *(2024)*

- Ranked **1st** among 102 same-year students in the Department of Computer Engineering with a **3.92 GPA**.

National Universities Entrance Exam (Konkur)*, Iran* *(2020)*

- Ranked **523rd** (**top 0.3%**) out of over **155,000 participants** nationwide, demonstrating exceptional academic performance and dedication.