

Alireza Noroozi

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EDUCATION

Sharif University <i>Bachelor of Science in Computer Engineering</i>	September 2020 - June 2024 <i>GPA: 17.68/20 (3.54/4.0)</i>
Koc University <i>MSc in Computer Engineering</i>	October 2025 - Present

PUBLICATIONS

- **A. Noroozi** and A. Gürsoy, AMP-DiT: Antimicrobial Peptide Design with Denoising Diffusion Transformers and Classifier Guidance, GenBio Workshop at ICML 2026 (poster). [paper](#) [code](#)
- Kalematis, M., **Noroozi, A.**, Shahbakhsh, A. et al. ParaAntiProt provides paratope prediction using antibody and protein language models. Sci Rep 14, 29141 (2024). [link](#)
- J. Reyes, **A. Noroozi**, Y. Xiao and M. Kersten-Oertel, Bridging the Gaps: Imputation of Parkinson's Disease Clinical Assessments With Federated Learning, in IEEE Journal of Biomedical and Health Informatics. [link](#)

WORKING EXPERIENCE

310.ai <i>AI Engineer in Computational Biology</i> • Working on Protein Design Deep learning models • ML research on Taxonomy prediction models. • Designing Protein Binders using AI • Developing AI chatbot backend using LLM calling Tools	September 2024 – October 2025
Internship@Concorida <i>Deep Learning, Medical Imaging</i> • Summer Internship in Machine Learning and medical data, Medical imaging	June 2021 – September 2021
AI Medical <i>Deep Learning, Medical Imaging</i> • Summer Internship in Machine Learning and medical data, Medical imaging	June 2021 – September 2021
Ershan Total Solution <i>PHP, Back-end, Web developer</i> • Developing website for trade in stocks using Laminas Framework in Php. • my Last project was Excel and Pdf generator for all reports.	June 2022 – September 2022
Salam High school <i>Mathematics Olympiad tutor</i> • Teaching Mathematical Olympiad in high schools (Geometry, Algebra, combinatorics, Number Theory).	September 2021 – March 2023

HONORS

- Awarded the 2025 Presidential Fellowship at Koc university for MSc Entrance.
- Awarded the 2024 Vector Scholarship for MSc Entrance at York University, valued at 17,500 CAD.
- Acquired Bronze (2018) and Silver (2019) medals in **Iran's national Mathematical Olympiad**.
- Ranked 31 among 150k+ participants in Iran's national university entrance in 2020 (AKA. KONKUR).

RESEARCH INTERESTS

- Large language model for biological sequences
- Protein Design Models
- Antibody Design

RESEARCH EXPERIENCE

- DELTA Team, Inria Nancy** | *Protein Binder Design, Molecular Dynamics* June 2026 – Present
- Summer research internship under supervision of Hamed Khakzad and Yasaman Karami
 - Evaluating protein binder design candidates using **molecular dynamics simulation** to assess protein flexibility and binding quality
 - Contributing to computational biology research on protein design and binder assessment pipelines
- AMP-DiT** | *Generative Modeling, Diffusion Transformers, Computational Biology* October 2025 – Present
- Koç University, Computer Engineering; supervised by Prof. Attila Gürsoy and Prof. Özlem Keskin
 - Developed **AMP-DiT**, a denoising diffusion transformer for antimicrobial peptide generation directly in sequence space
 - Guided generation with an AMP classifier to produce diverse peptides with strong predicted antimicrobial activity
 - Accepted as a poster at the GenBio Workshop at ICML 2026
- Taxonomy Lineage Generation** | *Transformer Models, Protein Language Models, Sequence-to-Sequence Learning* 2024
- AI Research Engineer, 310.ai
 - Built a **transformer-based model** that generates full **taxonomy lineages** from protein sequences.
 - Designed training pipelines, tokenization strategies, and loss functions to stabilize sequence generation.
 - Addressed token collapse issues (model repeating most frequent token) and improved generalization via curriculum learning and embedding regularization.
- TED Domain Classifier** | *Protein Domain Classification, Fine-Tuning, Multiclass Modeling* 2024
- AI Research Engineer, 310.ai
 - Project Link
 - Created a **multi-class classifier** for TED immunoglobulin domains using protein LMs (ProtT5, ESM-2).
 - Ran large-scale data preprocessing, domain extraction, and fine-tuning experiments on GPU clusters.
- IgG1 Binder Design** | *Protein Design, Generative AI, Structural Modeling* 2024
- AI Research Engineer, 310.ai
 - Designed **IgG1 antibody binders** using generative protein models and sequence design pipelines.
 - Integrated structural constraints and PLM embeddings to guide binder specificity and stability.
- OPL** | *Transfer Learning, Pytorch, Antibody, Paratope Prediction* June 2023 – September 2024
- Department of Computer Engineering, Sharif University
 - Research as Bachelor Project under Supervision of Dr. Koochi
 - ParaAntiProt: A Transfer Learning for Paratope Prediction only using Sequence
 - Improving the accuracy of Paratope Prediction using Protein Language Models
- apLab** | *Federated Learning, ML Medical, Pytorch, Parkinson Diseases* June 2023 – September 2023
- Department of Computer Science, Concordia University, Montreal City, Canada
 - Research as Intern under Supervision of Dr.Kersten-Ortel
 - Comparing and implementing different Federated Learning Algorithms for data imputation on Parkinson's Diseases.
 - Using GAN and Machine Learning methods for Parkinson's disease prediction with distributed data
- apLab** | *Federated Learning, Distributed Deep Learning, Pytorch* June 2023 – September 2023
- Department of Computer Science, Concordia University, Montreal City, Canada
 - Research as Intern under Supervision of Dr.Kersten-Ortel
 - Implementing PW, FedAvg, FedOpt, ..., in Pytorch and working on Mathematically proof of PW Convergence
 - Developing federated Algorithms for increasing performance in non-identical data
- OPL** | *Attention Deep Learning Models, Protein Affinity Binding, Pytoch, MHC-Peptide* Dec 2022 – Mar 2023
- Department of Computer Engineering, Sharif University
 - Research as a Bachelor Student under the Supervision of Dr.Koochi

LANGUAGE PROFICIENCY

- Persian Native
- English Fluent TOEFL(T:97, R:26, L:25, S:25, W:21)

TEACHING ASSISTANT EXPERIENCE

- Head of Teaching Assistant Team of Probability and Statistics for 2 Semester (lecturer: Dr.Sharifi-Zarchi)
- Head of Teaching Assistant Team of Compiler Design (lecturer: Dr.Hosseinmardi)
- Project's Head in Teaching Assistant Team of Intro to Bioinformatics
- Distrecte Structures, Probability and Statistics(2 times), Basic programming Python