

# ILYA RAVAND

## Computer Science

✉ Mail    ☎ +98 9306409245    📍 Tehran, Iran    🏠 Github    in Ilya Ravand    📁 Portfolio

## FIELDS OF INTEREST

- Computational Methods in Cancer Research
- Artificial Intelligence and Machine Learning
- Data Science and Statistical Modeling
- Bioinformatics and Computational biology
- Deep learning and Predictive Analytics

## EDUCATION

### Bachelor of Computer Science

📅 Sept. 2022 – present

📍 Amirkabir University of Technology, Tehran, Iran

- GPA: 17.13/20 with total 99 passed credits

### Mathematic and Physics high school diploma

📅 Sept. 2019 – Aug. 2022

📍 Tehran, Iran

- GPA: 19.3/20

## SKILLS

**Programming & Scripting:** Python, C, C++, R, Bash, Git/GitHub.

**Bioinformatics tools:** Monocle3, pySCENIC, CellOracle, TradeSeq, SCPA, InferCNV, BioRender, Cytoscape.

**Deep Learning & ML & Statistics:** Machine learning pipelines, statistical testing, scikit-learn, PyTorch, Transformers-related project and local LLM deployment.

**HPC & Reproducibility:** Docker, conda, renv, pipeline development.

**Databases & Data Engineering:** MySQL, MongoDB, Redis.

**Molecular modeling & MD:** GROMACS, Amber, AutoDock Vina, trajectory analysis, PyMOL.

## ARTICLES & PROJECTS

### Bioinformatics

#### Molecular Dynamics Simulation of Doxorubicin Binding to DNA and Topoisomerase II

📅 Jun. 2025 – present

- Building an MD workflow to simulate and analyze how doxorubicin binds DNA and stabilizes specific binding poses.
- Collaborating with biologists and computational physicists to validate computational predictions.
- Assistant Supervisors: Dr. Arash Boochani and Dr. Fatemeh Zare-Mirakabad

#### Integrative Single-Cell Transcriptomics to Identify Regulatory Drivers in the Dedifferentiation of Thyroid Cancer

📅 Sep. 2024 – present

- Identified candidate transcription factors and genes driving transitions from **Normal** → **PTC** → **ATC**, with results currently under experimental validation in collaboration with biologists.
- Assistant Supervisors: Dr. Kaveh Kavousi and Dr. Vahid Haghpanah

#### Contribution to Master's Thesis Project: Identification of driver genes in Glioblastoma based on single-cell gene expression data utilizing pseudotime and phylogenetic analysis

📅 Dec. 2024 – present

- Assisted in writing the article draft and preparing a research poster.
- Supervisors: Dr. Kaveh Kavousi and Dr. Fatemeh Zare-Mirakabad

## Advanced Programming

- Packman with QT 🧩

## Artificial Intelligence

- Packman reflex agent 🧩
- Maze solver 🧩
- Implementation of CSP on four color map theorem 🧩
- Implementation of KNN and Kmeans on Bank Dataset 🧩
- Clustering Dry beans Dataset with Genetic Algorithm 🧩

## WORK EXPERIENCE

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### Research Center Memberships

- Member, Computational Biology Research Center (CBRC), Amirkabir University
- Member, Complex Biological Systems and Bioinformatics (CBB), Tehran University

### Teaching Assistant

📅 2023 – 2024

- Advanced programing (Dr. Mohammad Reza Kazemi, Fall 2023)
- Basic programing (Dr. Zahra Ghorbanali, Fall 2023)
- Data structure and Algorithms (Dr. Mohammad Reza Kazemi, Spring 2023)
- Data Structures and Algorithms (Dr. Zahra Ghorbanali, Fall 2024)
- Data Structure and Algorithms (Dr. Ardeshir Dolatimalekabad, Fall 2024)

### Teaching International Olympiad in Informatics Algorithms to high school students

📅 2022 – present

📍 Allameh Tabatabaei High School, Tehran, Iran

## PRESENTATIONS

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### Predicting protein-protein interactions by the attention between sets of gene ontology terms

📅 Fall 2024

- Presented the paper in multiple graduate-level classes, explaining methodology and findings.
- Explored and implemented the core concepts, gaining hands-on experience with attention mechanisms in biological networks.

## HONORS🏆

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- ICPC (International Collegiate Programming Contest, Asia Region, Tehran site)

**Qualified by ranking 4th in Amirkabir Collegiate Programming Contest (ACPC). Competed at ICPC Tehran site in 2023 and 2024, with best result placing among top 20 teams.**

📅 2023–2024

📍 Tehran, Iran

- Iran's Olympiad in Informatics

**Ranked 3th (Bronze medal)**

📅 Jan. 2020

## LANGUAGES

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English  
Persian  
German



## REFERENCES

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**Dr. Kaveh Kavousi**

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[kkavousi@ut.ac.ir](mailto:kkavousi@ut.ac.ir)

**Dr. Fatemeh Zare-Mirakabad**

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**Dr. Vahid Haghpanah**

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