

Ela Fallik

☎ (+972) 54-470-4123 | ✉ ela.fallik@huji.mail.ac.il | 📧 [elafallik](#) | 📄 ORCID: 0001-0758-688

Education

Ph.D. Candidate in Computer Science, the Hebrew University of Jerusalem (HUJI)

Under the supervision of Prof. Nir Friedman

Since 2022

Research subject: My focus lies in probabilistic modeling of biological sequencing data. In particular, how can we construct robust and explainable models representing complex real-world distributions? Currently, my research explores the integration of state-of-the-art architectures with traditional probabilistic models to analyze *liquid biopsy* data, with the ultimate goal of developing minimally invasive diagnostic tools.

M.Sc. in Computer Science, HUJI

Thesis title: Cell-Type Decomposition with Component Variation using VarNMF

Final grade: 97.1

2020 - 2022

B.Sc. in Computer Science and Mathematics, HUJI

Final grades: CS - 96.0, Math - 93.8

2016 - 2019

Experience

Poster: Cell-type decomposition with program variation in liquid biopsies

POSTER PRESENTATION AT CNAPS 2024, BIOINFORMATICS APPROACHES FOR CFDNA ANALYSIS

March 2024

Presentation: Cell-type decomposition with component variation

PRESENTATION AT FISEB/ILANIT 2023, BIG DATA IN HEALTH AND DISEASE

Feb 2023

Probabilistic Methods in Artificial Intelligence course, HUJI

TEACHING ASSISTANT

Since 2021

Teaching the general framework of Probabilistic Graphical Modeling, which aims to represent complex joint distributions as factorizable factors using graphs. This includes Representation, Inference and Learning chapters, as well as Reinforcement Learning.

- Developing new teaching materials for an advanced machine learning course
- Leading class discussions and recitations
- Implementing visualization tools for machine learning material to aid teaching

Prof. Nir Friedman's lab for computational biology, HUJI

GRADUATE STUDENT

Since 2021

Ph.D. research topics:

- Developing probabilistic models representing various types of liquid biopsy data
- Integrating state-of-the-art architectures and probabilistic graphical models to promote explainability
- Combining multiple data types to increase robustness and reconstruct missing data

M.Sc. research:

- Blind separation of mixed sources, taking into account the sources variation in signal across the population
- Application in liquid biopsy assay developed in the lab

Mentoring undergraduate students in various lab projects

Computer Cons. Workshop: From Nand to Tetris course, HUJI

TEACHING ASSISTANT

2020, Since 2022

Prof. Tommy Kaplan's lab for computational biology, HUJI

UNDERGRADUATE LAB PROJECT

2019

Detecting replication origins in individual cells using Nanopore sequencing

Atidim Program, HUJI

COMPUTER SCIENCE AND MATH TUTOR

2018

Tutoring and mentoring undergraduate students from socioeconomic and geographical periphery

Skills

Programming Python, Java, C, C++

Languages Hebrew (native), English

Algorithmic

- Development of advanced algorithms for biological data
- Practical applications of Probabilistic Graphical Models
- Statistical machine learning
- Big data analysis

Honors and Awards

Dean's Honor List, Faculty of Science, HUJI

2017, 2018, 2019, 2020

Excellence Program for B.Sc. Students, Computer Science Faculty , HUJI

2017-2019