Yadin Benyamin

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Summary

Results-driven researcher and educator with a robust mathematics and computer science foundation, complemented by extensive experience in AI, machine learning, and advanced data analysis. Skilled at addressing complex challenges through interdisciplinary approaches that span scientific research, developing innovative solutions, and engaging science education. Adept at translating technical concepts for diverse audiences, mentoring students, and collaborating in academic and industry environments. Passionate about continuous learning, bridging theory with practice, and contributing to advancements in technology and education.

Education

2022-present ***M.Sc. in Mathematics & Computer Science Program, AI - Machine Learning - Computer vision Track, with thesis, Weizmann Institute of Science***

Personal GPA: 93.3 Class GPA: 91.1

Notable courses: Deep Learning for Computer Vision: Fundamentals and Applications

2023-2025 ***Computer Science Teaching – Teaching Certificate, Weizmann Institute of Science***

Personal GPA: 100 Class GPA: 93.4

Notable courses: AI in Science Education

2018-2022 ***B.Sc. in Computer Science, Ben-Gurion University of the Negev (BGU)***

*Summa cum laude***.** Rank: 5 out of 249 graduates

GPA: 93.37

Notable courses: Systems Programming, Principles of Programming Languages, Distributed System Programming: Scale Out with Cloud Computing and Map-Reduce

2014-2017 ***Magshimim National Cyber Program***

The program span over 540 hours. During this time, I have acquired knowledge in various fields:

- Program development projects written in C, C++, C# programming languages.
- Network intro - Open Systems Interconnection model (OSI model), central protocol, communication sniffing and exploring using Wireshark, knowledge in UDP, TCP/IP, HTTP DNS.
- Network programming in Python using Scapy, Sockets, and building a concluding project.
- Computer architecture - Boolean algebra, advanced logical portals, low-level programming, computer-built assembly language, and operating systems (Windows and Linux).
- NET Git, SQL, Shell

As a final project, I developed a social network program written in Java on Android Studio with Google Firebase.

2011-2017 ***Zinman Highschool, Dimona***

GPA (according to BGU): 113.51

Experience

2023-present ***AI Researcher in Prof. David Harel Prosodic Lab, Weizmann Institute of Science***

- Deep Learning text-to-speech (TTS) with emotions. Developed a deep learning model to transform the emotional tone of recorded speech by fine-tuning OpenAI's Whisper for speech emotion recognition and synthesis. The work included processing the MSP podcast corpus to train the model, together with an adapted emotion wheel based on Plutchik's model, implementing curriculum learning techniques, and addressing model training and fine-tuning challenges. This thesis project aims to advance emotional speech synthesis by enabling speech emotion transformation from TTS to emotional speech synthesis (ESS).

2022-2023 ***Research Projects, Weizmann Institute of Science***

- Data Augmentation for Prosody Analysis and Recognition – I explored novel data augmentation methods for prosody analysis in speech recognition, including Room Impulse Response and background noise addition. Increased labeled prosodic data by implementing augmentation techniques that preserve prosodic features. Improved prosody classification network performance by achieving up to 3% increase in segmentation kappa values. Utilized

advanced machine learning models, specifically fine-tuned Whisper ASR systems. Presented findings that contribute to the understanding of prosody-preserving data augmentation. Worked in the prosodic lab with Prof. David Harel and Dr. Tirza Biron.

- Interpretability for the OCT-Transformer – I developed explainability methods for the OCT-Transformer, a neural network architecture for classifying retinal deformations from OCT (Optical Coherence Tomography) scans. Implemented Relevance Propagation techniques to improve model interpretability over traditional methods like Grad-CAM. Trained Vision Transformer (ViT) models on medical imaging datasets (Kermany and Hadassah datasets), enhancing classification accuracy to 99.3%. Analyzed and compared explainability approaches for transformer architectures in medical imaging.
  Worked with Prof. Shimon Ullman, Dr. Meirav Galun, and Dr. Danny Harari.

2017-2018 ***Software Developer, Geographic Information System (GIS) department, Israel Police Technological Directory***

- Big Data transformation of an SQL database to Elasticsearch – I developed a Python project with generic programming that handles different types of tables. The program is built as one big distributed system that deals with data transfer. It uses PostgreSQL and MSSQL to send queries, create Generic JSON, and automatically upload files to Elasticsearch using generic guiding principles. The system was implemented with Synchronized Thread. The Israeli police are still using the program to this day.
- Developing geographical algorithms written in Python, C#, and Java programming languages.
- Collaborating on multiple projects within a large team using GitHub.

2014-2017 ***Private tutor for mathematics and computer science***

Private lessons for high school students at all levels, including preparation for “Bagrut” exams.

Social Involvement

2017 ***Private tutor of an elementary school student***

Volunteer to provide social and educational support.

2014-2017 ***Karate Instructor, Black belt***

Volunteered in guiding groups of 20-30 elementary and middle school participants.

Awards

2019-2021 Yearly certificate of excellence from head of the computer science department, Ben-Gurion University of the Negev

2017 "Outstanding Student" certificate given by the director general of the Ministry of Education

2017 “Outstanding periphery student” certificate, given to the top 5 students in high school

2014-2017 Social “Bagrut” award for social involvement during high school, given by the Ministry of Education

Technical Skills

Programming Languages: C • C++ • C# • Java • Python • Assembly

Tools & Technologies: Git • Amazon Web Services (AWS) • SQL Databases (PostgreSQL, MSSQL) • Elasticsearch • Domain Name System (DNS) • Internet Protocol Suite (TCP/IP) • Network tools (e.g., Wireshark)

Frameworks, Libraries & Concepts: Software Development & Distributed Systems • High-Performance Computing (HPC) – Cluster management, parallel processing, MPI jobs, and GPU utilization • Big Data Processing • Algorithms & Analytics • Network Programming • Deep Learning for Computer Vision & Speech (e.g., fine-tuning OpenAI Whisper, Vision Transformer) • Data Augmentation & Curriculum Learning Techniques

Languages

Hebrew – native | ***English*** – proficient

References available upon request