Assaf Ben-Kish - Curriculum Vitae

https://assafbk.github.io/website | assafbk@gmail.com | +972(0)-549982536

Education

2022 - Present: PhD (Direct Track) in Electrical Engineering, Tel-Aviv University, Israel
- Specializing in Deep Learning and Large Language Models
- Current GPA: **99.27/100**

2018 - 2022: B.Sc. in Electrical Engineering and Computer Science, Technion, Israel
- Specialized in Machine Learning and Signal Processing
- Final GPA: **91.3/100 - Magna Cum Laude,** included in the **President's honor list** and **Dean's honor list**

Publications

- **DeciMamba: Exploring the Length Extrapolation Potential of Mamba**
  Assaf Ben-Kish, Itamar Zimerman, Shady AH, Nadav Cohen, Amir Globerson, Lior Wolf, Raja Giryes. **ICLR 2025**. link
  We utilize Mamba explainability techniques to investigate why Mamba's length-extrapolation capabilities are limited, and propose DeciMamba, a context extension method, which can extrapolate to sequences that are magnitudes longer than those seen during training, without requiring additional computational resources or re-training.

- **Mitigating Open-Vocabulary Caption Hallucinations**
  Assaf Ben-Kish, Moran Yanuka, Morris Alper, Raja Giryes, Hadar Averbuch-Elor. **EMNLP 2024**. link
  Due to their closed-vocabulary design, existing hallucination metrics and algorithms ignore many hallucinations produced by SOTA image captioning models. By leveraging recent progress in generative foundation models, we propose a unified framework for quantifying and mitigating open-vocabulary hallucinations.

- **Bridging the Visual Gap: Fine-Tuning Multimodal Models with Knowledge-Adapted Captions**
  Moran Yanuka, Assaf Ben-Kish, Yonatan Bitton, Idan Szpektor, Raja Giryes. **Under Review 2024**. link
  We identify that fine-tuning Vision-Language Models (VLMs) on dense captions leads to increased hallucination rates, and propose KnowAda, a model-specific data augmentation method which mitigates hallucinations by adapting the dense captions according to the model's existing knowledge.

- **Constant Beamwidth LCMV Beamformer**
  Ariel Frank, *Assaf Ben-Kish, Israel Cohen.* **EUSIPCO 2022**. link
  Finding a design for a Constant Beamwidth LCMV Beamformer which is simple, computationally efficient and that has significant sidelobe attenuation.

Research Projects

- **Implementing and Improving the DDPG-MP algorithm -** Final projects in Deep RL, CRML laboratory, Technion
  (i) Evaluating a robotic manipulation algorithm (ii) Improving the algorithm using Model-Based methods.

Awards and Scholarships

- **Direct-Track PhD Scholarship from The Center for AI & Data Science, Tel-Aviv University - 2024**
- **Travel Grant from The Center for AI & Data Science, Tel-Aviv University - 2024**
- **Award of Excellence for M.Sc Students, Engineering Department, Tel-Aviv University - 2024**

Talks

- **MIT CSAIL, SLS Group -** "DeciMamba: Exploring the Length Extrapolation Potential of Mamba" - December 2024
- **MIT CSAIL, Scale ML seminar** - "DeciMamba: Exploring the Length Extrapolation Potential of Mamba" - June 2024
- **Northeastern, Prof. Bao's Lab** - "DeciMamba: Exploring the Length Extrapolation Potential of Mamba" - June 2024
- **TAD Deep Learning Theory Retreat -** "Mitigating Open-Vocabulary Caption Hallucinations" - April 2024

Additional Experience

- **2021-2023 - Algorithms Engineer at Vayyar**
  Development of Methods for Antenna Array Calibration:
  Model-Based Trace Calibration and Model-Free Online Trace Calibration, Statistical Methods for Leakage Removal, Radiation Pattern Estimation, Created and Teached Vayyar's Array Calibration Course

- **2020 - 'Signals and Systems' Course Tutor at the Technion**
- **2017 and summer of 2018 - Software Developer at Insoundz LTD**

- **2014-2017 - Member of a leading R&D team at Unit 81 - The Technological Unit of the Intelligence Branch, IDF**
  - Specialized in R&D in the field of digital communication and reverse engineering
  - Awarded outstanding employee of the Electrical Engineering Department (out of 1000 employees)

Programming and Software knowledge: Python, Matlab, C, C++, Linux and open-source software, such as: Pytorch, Docker, Pybullet, FFMPEG, etc.

Community Involvement

- Mentor in a “Big Brother” program for new EE students at the Technion - 2018, 2019, 2020
- Youth Movement Supervisor + Tutor of a child from a low socio-economic background - 2013
- Year of Service - The Jewish Agency, Greater New-Haven, CT, USA - 2012-2013

Languages: Hebrew, English - native tongue level