Berat Tuna Karli

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WORK EXPERIENCE

Synnada   **Jan 2022 — Present**

Lead Machine Learning Engineer - Founding Engineer   *Austin, TX, United States - Full Time - Remote*

- Building an ML compiler from scratch (open source part: Mithril) with modular model composition on logical level, model compilation (flattened graph optimizations + language & framework agnostic code generation), and flexible parallelizability and training.
- Implementing e2e compilable SOTA models like Flux and WAN.
- Developing a robust optimizer that eliminates the need for hyper-parameter tuning and post-training quantization.
- Building & deploying e2e agentic workflows.
- Leading a team of 4-5 engineers since September 2023.

METU - Deep Learning & Computer Vision Lab   **Sep 2020 — Dec 2021**

Graduate Research Assistant   *Ankara, Turkey - Full Time - On-site*

- Developed novel methods to improve perceptual quality of adversarial examples using perceptual distance minimization and variance-based weighting schemes, achieving quantitative improvements on NIPS2017 datasets.
- Designed training algorithms for universal adversarial perturbations with alternating loss functions, achieving 95% fooling rate.
- Created imperceptible adversarial examples via spatial chroma-shift transformations in color channels.

Monty Labs   **Jun 2019 — Jul 2020**

Full Stack Developer   *Ankara, Turkey - Full Time - On-site*

- Developed "Trackr", an Active Tracking System utilizing Beacon Technology for real-time indoor employee monitoring and analytics where GPS doesn't work, enabling managers to locate personnel across venues and analyze performance metrics.
- Built web applications providing real-time data visualization and reporting dashboards for decision-making, reducing overtime costs.
- Implemented IoT-based B2B software solutions for businesses, integrating sensor networks with analytics platforms for venue management.

RESEARCH INTERNSHIPS

Bilkent University   *Oct 2018 - Aug 2019, Ankara, Turkey*

- **Research Assistant**: Conducted research on predictive processing with Dr. Burcu Ürgen.

Universiteit Gent - Verguts Lab   *Jul 2018 - Sep 2018, Ghent, Belgium*

- **Research Intern**: Conducted multi-step decision-making project (computational modelling, parameter optimization).

Bogazici University - Neuro-signal Lab   *Jul 2017 - Sep 2017, Istanbul, Turkey*

- **Research Intern**: Conducted research under Prof. Dr. Ahmet Ademoglu's supervision.

PUBLICATIONS & TALKS

- **ACM Hour of AI series (Talk): Explore Agent AI Systems - Bilkent University**   **2025**
- **AAAI-22: Improving Perceptual Quality of Adversarial Images Using Perceptual Distance Minimization**   **2022**
- **AAAI-22: Training Universal Adversarial Perturbations with Alternating Loss Functions**   **2022**
- **ACM Multimedia 2021: Imperceptible Adversarial Examples by Spatial Chroma-Shift**   **2021**
- **Rapid X-Ray Chest Radiograph and Mortality Rate Evaluation With AI For COVID-19**   **2020**

SKILLS

- **Programming Languages**: Python, C, C#, Rust, R, Java
- **ML Technologies**: PyTorch, JAX, MLX, GGML, TensorFlow, CUDA, Optuna, Weights & Biases
- **Other Technologies**: LangChain, LangGraph, FastAPI, AWS, GCP, Ray, Docker, Kubernetes, Kafka, Firebase, Git

EDUCATION

Middle East Technical University   Sep 2019 — Dec 2022
Master of Science, Information Systems (Deep Learning)   *Ankara, Turkey*

- Thesis: Attack Independent Perceptual Improvement of Adversarial Examples
- TUBITAK 1001 Scholarship

Bilkent University   Sep 2014 — Jun 2019
Bachelor of Science, Computer Science   *Ankara, Turkey*

- Comprehensive Scholarship