

# Antonios Tragoudaras

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Antonios-Tragoudaras

## Education

### University of Amsterdam (UvA)

Amsterdam, Netherlands

MSc in Artificial Intelligence (Informatics Institute)

Aug. 2023 - Present

GPA: 8.31/10 (Finished First year) - In track to graduate with cum-laude (highest distinction).

Actively seeking a research opportunity to allow me to work on an emerging AI challenge and possibly conduct my master thesis on.

### King Abdullah University of Science and Technology (KAUST)

Jeddah, Saudi Arabia

Ph.D. Student in Electrical and Computer Engineering

Aug. 2022 - Aug. 2023 (Dropped out)

GPA: N/A, 24 Credits - Doctoral Dissertation Research.

### University of Thessaly

Volos, Greece

BEng in Electrical & Computer Engineering (5-years studies; 300ECTS)

Sep. 2016 - Nov. 2021

GPA: 8.88/10, Thesis Grade: 10/10, Supervisor: Prof. George Stamoulis.

## Research Experience

### Generative AI , Learning Physics from Videos

University of Amsterdam (UvA)

Research Project led by Associate Professor Efstratios Gavves to create a new real-world dataset, and test the capabilities

of text-&image-to-video models (namely world-models) like [OpenAI-SORA](#).

May.2023-Present

Duties/Tasks + Goal:

- Discovering the limitations of video-generation models with prompt engineering.
- Optimizing SOTA generative models capabilities in understanding physics.
- Developing a pipeline for Tracking, and Segmentation (based on [DEVA](#), [Grouned SAM](#)) and extending for Depth Estimation to be used on videos generated by world models.
- Goal: Contributing on Open-Sora-Plan.

### Visual Perception for Autonomous Vehicles - [Brightskies Inc.](#)

External Collaboration

Remote Collaboration, monitored by Mahmoud Serour (Autonomous Driving Team Lead) and Mohamed Ezzat

(Perception Engineer). Collaboration Initiated by Research Scientist Hakim Ghazzai (AI Team Lead of our research

Mar.2023-Jul.2023

group).

Duties/Tasks:

- Main Ph.D. Research Topic: Improving Multi-Task Perception Performance through learning better intermediate representations with the fusion of different sensor modalities (LiDAR, Camera, Radar)

### Neural Architecture Search, Meta-Heuristic Optimization, Transformers for brain signal decoding

King Abdullah University of  
Science and Technology (KAUST)

Ph.D. Student, supervised by Postdoc Fellow Charalampos Antoniadis

Sep. 2022 - Feb.2023

Journal Publications:

- Enhancing DNN models for EEG/ECOG BCI with a Novel Data-Driven Offline Optimization Method (IEEE Access)

Paper Publications:

- Data-Driven Offline Optimization of Deep CNN Models for EEG and ECOG Decoding (ISCAS'23)

### AutoML, Efficient Deep Learning Techniques, and Voice Activity Detection

Visiting Student Research  
Program-KAUST

Visiting Student Research Intern, mentored by Postdoc Fellow Charalampos Antoniadis

Feb. 2022 - Jul. 2022

Paper Publications:

- TinyML for EEG Decoding on Microcontrollers (ISCAS'23)
- Audio-visual Speaker Diarization: Improved Voice Activity Detection with CNN based Feature Extraction (MWSCAS'22)

### Accelerating Inference of Deep Neural Networks on FPGAs

University of Thessaly

Undergraduate Researcher, mentored by Prof. George Stamoulis and Postdoc Fellow George Floros








Jul. 2021 - Jan. 2022

Journal Publication:



- Design Space Exploration of a Sparse MobileNetV2 Using High-Level Synthesis and Sparse Matrix Techniques on FPGAs (MDPI Sensors'22)

## Projects & Skills

## PyTorch/Python

- Efficient Language to Vision Alignment allowing VLMs to excel in VQA tasks > 
- Examining Racial and Gender Biases in Large Language Models Through the Lens of Emotional Analysis > 
- Visual prompting for in-context learning with CLIP > 
- Developed a hydra DL network with multiple heads (proprietary) to tackle the challenges in autonomous vehicle perception, leveraging the power of multi-task learning > 
- Each head of the hydra network corresponds to a different downstream computer vision task
- BEVFusion is used as backbone (Multi-Task Multi-Sensor Fusion with Unified Bird's-Eye View Representation)
- Implemented a small-scale, Transformer-based model (OpenAI's GPT2) for text generation tasks, using pre-trained weights > 
- Fundamental Generative Models (Variational Autoencoders, Adversarial AE) for Image Generation 
- Multi-Layer Perceptron trained with back-propagation from scratch using (Numpy) & torch > 

## Tensorflow/Python

- Transformer-based Deep Learning Architecture trained in a data-driven offline fashion along with a meta-heuristic implementation > 
- Extended the capabilities of uNAS (an Auto-TinyML framework) > 

## C/C++

- Main program language taught during undergraduate courses, used for personal and course projects mainly
- Coded C++ kernel/function implementing Depth-wise and Point-wise Convolutions, that was utilized during High-Level Synthesis tool (Xilinx Vitis HLS)

## Publications

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Full list is available at [Google Scholar](#)

- [1] **Antonios Tragoudaras**, Charalampos Antoniadis, Yehia Masoud. "Enhancing DNN models for EEG/ECOG BCI with a Novel Data-Driven Offline Optimization Method," in *IEEE Access*, vol. 11, pp. 35888-35900, 2023, doi: 10.1109/ACCESS.2023.3265040
- [2] **Antonios Tragoudaras**, Charalampos Antoniadis, Yehia Masoud. "TinyML for EEG Decoding on Microcontrollers," in *2023 IEEE 56th International Symposium on Circuits and Systems (ISCAS)*
- [3] **Antonios Tragoudaras**, Pavlos Stoikos, Konstantinos Fanaras, Athanasios Tziouvaras, George Floros, Georgios Dimitriou, Kostas Kolomvatsos, Georgios Stamoulis. "Design Space Exploration of a Sparse MobileNetV2 Using High-Level Synthesis and Sparse Matrix Techniques on FPGAs," in *MDPI Sensors* 22, no. 12: 4318, doi:10.3390/s22124318
- [4] Konstantinos Fanaras, **Antonios Tragoudaras**, Charalampos Antoniadis, Yehia Masoud. "Audio-visual Speaker Diarization: Improved Voice Activity Detection with CNN based Feature Extraction," in *2022 IEEE 65th International Midwest Symposium on Circuits and Systems (MWSCAS), Fukuoka, Japan, 2022*, pp. 1-4, doi: 10.1109/MWSCAS54063.2022.9859533

## Awards and Honors

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Aug. 2022- Aug.  
2023

**KAUST Graduate Fellowship:** Full tuition support, living allowance, housing, and medical coverage.

*KAUST*

## Academic Volunteering

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### IEEE Access

Peer Reviewer > 

March. 2023 - Present