

# Antonios Tragoudaras

🏠 <https://antragoudaras.github.io/> | 🌐 antragoudaras | 📄 Antonios-Tony-Tragoudaras | 📧 Antonios-Tragoudaras

## Education

### University of Amsterdam (UvA)

Amsterdam, Netherlands

MSc in Artificial Intelligence (Informatics Institute)

Aug. 2023 - Present

GPA: 8.25/10 - In track to graduate with cum-laude (highest distinction).

### 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: 7.88/10, 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](#) is part of a larger research effort aimed at evaluating the current capabilities of video generation models, like [OpenAI-SORA](#), in understanding real-world phenomena.

Jul.2024-Present

Duties/Tasks:

- Contribute towards transitioning from video-generation-models to real-world simulators.
- Starting January 2025, I will extend my current research project into my master's thesis, focusing on integrating instance slots to leverage object representations for enhanced controllability in video generation models. This work will be co-supervised by Prof. [Francesco Locatello](#) (ISTA, Austria), a distinguished expert in the field of Object-Centric Learning.
- Side-Goals:
  - Publish my research in a renowned AI venue (NeurIPS, ICML, etc.).
  - Conduct my MSc AI thesis as part of [ELLIS Amsterdam MSc Honours Programme](#). Update Dec. 4 2024, I have been accepted into the honours program, under the joint supervision Prof. [Francesco Locatello](#) and [Efstratios Gavves](#).

### 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 group).

Mar.2023-Jun.2023

Duties/Tasks:

- Combining methods for better Representation Learning and Early Fusion of the sensor data modalities used in autonomous cars, targeting to acquire better accuracy in downstream Computer Vision tasks.
- Multi-Task Learning Hydra network with multiple heads, each corresponding to a different downstream task, to achieve real-time performance on computationally constrained systems.

### 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

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

University of Thessaly








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 > 
- Fundamental Generative Models (Variational Autoencoders, Adversarial AE) for Image Generation 
- Visual prompting for in-context learning with CLIP >  (private repo)
- 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 >  (private repo)
- Multi-Layer Perceptron trained with back-propagation from scratch using (Numpy) & torch >  (private-repo)

### 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

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

Dec. 2024 - Present	<b>ELLIS MSc Honours Program:</b> Award and funding for excellent MSc students to conduct their thesis under their joint supervision of UvA ELLIS unit at an ELLIS partner institution outside of the Netherlands.	<i>UvA IvI</i>
Aug. 2022- Aug. 2023	<b>KAUST Graduate Fellowship:</b> Full tuition support, living allowance, housing, and medical coverage.	<i>KAUST</i>

## Teaching Experience

## Graduate Teaching Assistant at UvA's MSc AI Program

*UvA, Amsterdam, Netherlands*

Assisted in teaching graduate-level (first-year) courses by making sure students understood the material, answering their questions, creating assignments, giving feedback, and grading exams.

Aug. 2024 - Present

### Courses:

- Computer Vision 1 (MSc AI)
- **Deep Learning 1** (MSc AI)
- Fairness, Accountability, Confidentiality & Transparency in AI (MSc AI)