Călin Diaconu

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Education

I M-18		Sep 2022 - Dec 2024
	Università di Bologna, Artificial Intelligence	Jep. 2022 - Dec. 2024
	Final Grade: 98/110	
	 Graduation thesis: LATENT REPLAY-BASED ON-DEVICE CONTINUAL LEARN- ING USING TRANSFORMERS ON EDGE ULTRA-LOW-POWER IOT PLATFORMS The thesis explored PULP deployment solutions for continual learn- ing (CL) methods applied on Visual Transformers (ViT) by extending the PULP TrainLib library to support ViT, and by experimenting with latent replay and associated CL methods on transformers. It was written in Python and C, and it used the PyTorch library. 	
	• Coursework: Architectures and Platforms for Al; Image Processing and Computer Vision; Natural Language Processing; Machine Learning and Deep Learning; Combinatorial, Decision Making, and Optimization; Fun- damentals of Al and Knowledge Representation; Al in Industry; Languages and Algorithms for Al; Statistical and Mathematical Methods for Al.	
B. Eng.	Technical University of Cluj-Napoca, Computer Science	Oct. 2017 – Jul. 2021
	• Final grade: 9.20/10	
	• Graduation Thesis: <i>DETECTION OF LARGE ANIMALS ON ROADS USING MA-CHINE LEARNING METHODS</i> - The project was based on the YOLO architecture, it used partially synthetic data in the training process, and included particular image augmentation techniques that helped in obtaining promising results on real data. It was written in Python and it used the TensorFlow library.	
	• Coursework: Computer Architecture; Design with Microprocessors; Assembly Language; Image Processing and Pattern Recognition Systems; Data Structures and Fundamental Algorithms; Object-Oriented, Logic, and Functional Programming; Operating Systems; Formal Languages and Translators; AI; Databases; Computer Networks; Parallel Programming	

Other Academic Experiences _____

UNIBO MOTORSPORT, Driverless Division, Team Member

- Voluntary work on a project for F1TENTH competitions.
- Responsibilities in training and improving YOLO object detection models, and using the NVIDIA TensorRT SDK to serialize models for NVIDIA Jetson, and deploy them through the ROS platform.

and Distributed Computing; Software Engineering; Computer-Aided Graphics; Digital System and Logic Design; Electronic Measurements and Sensors; Analog and Digital Circuits; Electrotechnics; Ethics; Mathematics (Analysis, Linear Algebra, Analytical Geometry, Special Mathematics).

• The first competition happened in London, in June 2023, and the following steps were concerned with training and coordinating the new recruits, in preparations for future competitions.

Ghent University, Artificial Intelligence Summer Course

• A 10-day crash course on the topic of Artificial Intelligence, that included a theoretical overview, practical exercises, as well as company visits, organized by the Board of European Students of Technology (BEST). Bologna (BO), Italy Nov. 2022 – Aug. 2024

> Ghent, Belgium Jul. 2018

Work Experience _____

ARCES Laboratory, Research Grant	Bologna (BO), Italy
 Research on topics concerning on-device and continual learning, applied on LLMs and transformers for computer vision problems. 	Feb. 2025 - Present
Robert Bosch SRL., Computer Vision Department, ML Software Engineer	Cluj-Napoca (CJ), Romania
 ML software development for the automotive industry. 	Aug. 2021 – Jul. 2022
 Responsibilities in training new models, improving and extending previously im- plemented models, data analysis, and data quality check, both manual and auto- matic. 	
 The tasks covered concern object detection, image classification, and semantic segmentation. 	
Robert Bosch SRL., Computer Vision Department, Working Student	Cluj-Napoca (CJ), Romania
• I have developed a stand-alone system for detecting large animals on roads, in vis- ible spectrum images, using machine learning methods and synthetic data, based on the YOLO architecture, which also represented my bachelor thesis.	Jul. 2020 – Jul. 2021
Publications	
Metrics for Evaluating the Continuity Capabilities of Object Detection Systems	Oct 2021
Authors: Călin Diaconu, Cristina Pele, Mihai Negru	
 Published at the 2021 IEEE 17th International Conference on Intelligent Computer Communication and Processing (ICCP 2021), in Cluj-Napoca, Romania. 	
 The paper proposes two novel metrics for evaluating the consistency of object de- tection systems on continuous video sequences. 	
DOI: 10.1109/ICCP53602.2021.9733616 🗹	
Languages	

Romanian: native speaker.

English: C1 overall, certified through a Cambridge English Level 2 Certificate in ESOL International (Advanced).

Italian: Understanding - B2, Speaking - A2, Writing - A2.