# Georgios TZANNETOS

## PERSONAL INFORMATION

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| ADDRESS | Waldwiese 9, Saarbruecken |
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## ONLINE

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| WEBSITE | georgetzannetos.github.io |
| TWITTER | @gtzannet |
| LINKEDIN | linkedin.com/in/gtzannetos |
| GITHUB | github.com/GeorgeTzannetos |

INTERESTS — Reinforcement Learning, Deep Learning, Generative Models, Large Language Models, Program Synthesis

Internship Availability: August 2024

## EDUCATION

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| 9/2021–9/2025 | **Ph.D.** | COMPUTER SCIENCE | *Max Planck Institute of Software Systems, MPI-SWS* |
| 10/2016–12/2018 | **M.Sc** | COMPUTATIONAL SCIENCE AND ENGINEERING | *Technical University of Munich, TUM* |

GPA: 1.60 | *Thesis*: "Augmented Reality Data Generation for Deep Learning based Lane Detection" | Advisor: Dr. Ing. Habil Federico TOMBARI | *Relevant Courses*: Advanced Programming, Deep Learning, Computer Vision, Data Mining, Scientific Computing, Algorithms, Numerical Programming/Optimisation, Parallel Numerics

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| 10/2010–2/2016 | **M.Sc** | MECHANICAL ENGINEERING | *National Technical University of Athens, NTUA* |

GPA: 8.50 | *Thesis*: "A Continuous Differential Competitive Game between an Unmanned Aerial and a Ground Vehicle" | Advisor: Prof. Konstantinos KYRIAKOPOULOS | *Major*: Mechanical Design, Control Systems & Robotics GPA: 9.05 | *Relevant Courses*: Linear Algebra, Calculus, Dynamics, Mechanics, Operational Research, Control Theory, Robotics, Numerical Analysis, Statistics

## EXPERIENCE

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| 9/2019–6/2021 | **Data Scientist** at FUJITSU, FRANKFURT<br>Part of the software delivery team. Main tasks include the use, maintainance and further development of Fujitsu's **AutoML** system. Working on the sandbox development of Fujitsu's Digital Manufacturing Platform, i.e smart factory solution. |
| 2/2019–7/2019 | **Data Scientist/Computer Vision, Intern** at AGT R&D GROUP, DARMSTADT<br>Responsible for a PoC development for the virtual advertising project. Combination of classical computer vision methods, like image registration, developed in **OpenCV**, with customized deep learning models, mainly Mask-RCNN and DeepLab, in **Caffe2** and **Tensorflow**, to segment and produce real-time highly accurate advertisement masks on video broadcasts. |
| 5/2018–10/2018 | **Machine Learning in Autonomous Driving,** at AUDI, INGOLSTADT<br>Master Thesis, Automating the generation of a synthetic dataset, by superimposing objects on real images with the use of a computer graphics software, **Blender**. Image registration, depth completion and 3D road segmentation were implemented in **Python**. The created dataset was used to train a deep learning model to perform lane detection and performance was compared with real datasets, written in **Keras**. *Supervisor*: Dr. Yohannes KASSAHUN |
| 11/2017–2/2018 | **Data Scientist, Working Student** at TRILLR, MUNICH<br>Responsible for setting up and maintaining company's database, deployed in **Docker**. Migrating existing **MySQL** database to **MongoDB**. Responsible for collecting data from various sources and APIs and storing them. Daily, weekly and long term data analysis, regarding different relevant KPIs was performed with **Python**, **Pandas** and **Tableau** to increase productivity and suggest improvements. |
| 1/2015-2/2016 | **Research Assistant** at NTUA, CONTROL SYSTEMS LAB, ATHENS<br>Diploma Thesis, Applications with Robotics software and hardware. For this purpose **ROS** (Robot Operating System) was used, which is supported by **Linux**. Theoretical analysis and real-time implementation of game theory to the robotic platforms, Asctec Firefly and Pioneer Mobile Robot. Applied model predictive control, written in **C++**. |

## Skills

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| • • • C/C++ | • • • Tensorflow | • • • LaTeX | • • Fortran |
| • • • Linux | • • • OpenCV | • • Blender | • • ROS |
| • • • MATLAB | • • • Keras | • • MongoDB | • Spark |
| • • • Python | • • • Numpy | • • Hadoop | • SQL |
| • • • PyTorch | • • • Pandas | • • Docker | • JavaScript |

## Languages

**Greek**: native, **English**: Proficient(C1/C2), **German**: Independent(B2)

## Projects

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| **Distributed Data Mining Lab** | Our team created a multinode **Spark** cluster and ran applications in a distributed manner. A framework developed in **Python** was used to perform named entity recognition with conditional random fields (CRF) and then find relationships between the entities using support vector machines (SVM). The goal was to extract proteins and their possible locations from all existing papers stored in PubMed. Results were stored in **Elasticsearch**; **Kibana** was used for the final visualization. |
| **Iceberg Classification** | A deep learning model to achieve accurate binary image classification of satellite images was developed in **Pytorch**. Preprocessing with **Numpy** and **OpenCV** was performed, as well as image augmentation. To achieve the final results experimentation with state-of-the-art CNNs was done, along with cross-validation for hyper-parameter tuning. |
| **Text Classification** | A model was developed, trained and tested, in **PyTorch**, to classify text sentences from literature books. The method was based on Character Level Convolutional Networks. |
| **Programming in supercomputer SuperMUC** | Developed a parallel implementation of matrix-matrix multiplication in **C++**. Different parallel programming models were compared performance-wise, using **OpenMP** and **MPI**. Debugging parallel programs, as well as parallel I/O was researched. |

## Publications

[1] **Georgios Tzannetos**, Panos Marantos, and Kostas J. Kyriakopoulos. A competitive differential game between an unmanned aerial and a ground vehicle using model predictive control. In *MED*, 2016.

[2] **Georgios Tzannetos**, Bárbara Gomes Ribeiro, Parameswaran Kamalaruban, and Adish Singla. Proximal Curriculum for Reinforcement Learning Agents. In *TMLR*, 2023.

[3] Victor-Alexandru Pădurean, **Georgios Tzannetos**, and Adish Singla. Neural Task Synthesis for Visual Programming. In *TMLR*, 2024.

[4] **Georgios Tzannetos**, Parameswaran Kamalaruban, and Adish Singla. Proximal Curriculum with Task Correlations for Deep Reinforcement Learning Agents. In *IJCAI*, 2024.

[5] Mridul Mahajan, **Georgios Tzannetos**, Goran Radanovic, and Adish Singla. Learning Embeddings for Sequential Tasks Using Population of Agents. In *IJCAI*, 2024.

[6] Andi Nika, Debmalya Mandal, Parameswaran Kamalaruban, **Georgios Tzannetos**, Goran Radanovic, and Adish Singla. Reward Model Learning vs. Direct Policy Optimization: A Comparative Analysis of Learning from Human Preferences. In *ICML*, 2024.

## Honors/Awards

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| 2016-17 | Fulfilled the requirements to participate in the master's Honors track, Bavarian Graduate School of Computational Engineering (BGCE) |
| 2013-14 | Karudogianni Award Nominee, top student Mechanical Engineer, GPA: 9.36/10.0 |
| 2011-12 | Papakyriakopoulos Award for Mathematics Exams Excellence at NTUA |
| 2004-07 | Athanasiadi's Foundation Award for excellent school performance for 3 consecutive years |

## Activities

teaching, Tae-Kwon-Do athlete(2nd Dan), Rubik's cube speed-cuber, football