Otniel-Bogdan Mercea
Email : otimercea@gmail.com
Click to view my **Github Profile**
Click to view my **LinkedIn Profile**

Education

- **International Max Planck Research School for Intelligent Systems** — Tübingen, Germany
  PhD in Computer Science — *May 2021 - May 2024*
  - **PhD student**: in the EML and AVG groups working with Prof. Zeynep Akata and Prof. Andreas Geiger.
  - **PhD Topics**: multi-modal learning, zero-shot learning, explainability in self-driving cars.
  - **Responsibilities**: Maintaining and improving the EML group website.

- **The University of Edinburgh** — Edinburgh, Scotland
  MSc in Artificial Intelligence; Distinction (Overall 76%) — *Sept. 2019 - Aug. 2020*
  - **MSc thesis**: "What Neural Networks can not learn?". **Supervisor**: Amos Storkey. Grade - 77% (Distinction)
  - **Relevant Courses**: Accelerated Natural Language Processing || Algorithmic Game Theory and Applications || Machine Learning and Pattern Recognition || Machine Learning Practical || Natural Language Understanding, Generation and Machine Translation || Reinforcement Learning.

- **Politehnica University of Timisoara** — Timisoara, Romania
  BSc in Computers and Information Technology; Top 3% (Overall 9.70/10) — *Oct. 2015 - June 2019*
  - **Bachelor Thesis**: "HybridAlpha-Reinforcement Learning on Resource-Constrained Systems". **Supervisor**: Calin-Adrian Popa. Grade - 10/10
  - **Relevant Courses**: Data Structures and Algorithms || Object Oriented Design || Foundations Of Software Engineering || Linear Algebra, Probabilities and Statistics || Computer Security || Operating systems || Bases of Artificial Intelligence.

Experience

- **Everseen** — Timisoara, Romania
  Machine Learning Researcher — *Nov 2020 – Apr 2021*
  - Developed two patents.
  - Researched and developed better tracking systems in a real-time multi-camera setup.
  - Researched ways of applying self-supervised depth estimation to tracking.
  - **Technologies: Python, PyTorch, NumPy, Matplotlib, Shell Script.**

- **Presslabs** — Timisoara, Romania
  Junior Software Engineer — *July 2018 – Sept. 2018*
  - Worked on the open-source MySQL operator on Kubernetes.
  - Implemented new functionalities related to the behaviour of the MySQL cluster, tested them and also fixed bugs.
  - **Technologies: Go, Kubernetes.**

- **3Pillar Global** — Timisoara, Romania
  Junior Software Engineer — *June 2017- Sept. 2017*
  - Refactored essential parts of the software and fixed bugs.
  - **Technologies: TypeScript, React, Redux.**

- **"DSPLabs" research group at Politehnica University of Timisoara** — Timisoara, Romania
  Undergraduate Research Assistant — *Feb. 2017 - June 2018*
  - I was selected to develop an interface for the FENP algorithm, a real-time scheduling algorithm. My work was used in a tutorial on Litmus-RT page. **Technologies: Shell script, C, Linux.**

Publications

- **ECCV 2022**: "Temporal and cross-modal attention for audio-visual zero-shot learning". **Otniel-Bogdan Mercea***, Thomas Hummel*, A. Sophia Koepke, Zeynep Akata.
- **CVPR 2022**: "Audio-visual Generalised Zero-shot Learning with Cross-modal Attention and Language". **Otniel-Bogdan Mercea**, Lukas Riesch, A. Sophia Koepke, Zeynep Akata. This paper was also accepted at **L3D-IVU** workshop.

Talks

- **The University of Amsterdam, May 2022**: Title of the talk: "Audio-visual Generalised Zero-shot Learning with Cross-modal Attention and Language".
- **IMPRS-IS symposium, Tübingen Feb. 2021**: Title of the talk: "From explainability and interpretability to 3D computer vision and efficient learning: increasing the performance of autonomous agents" (acceptance rate 14%).

Selected Achievements and Awards

- **IMPRS-IS Scholarship**: awarded in 2021 to 57 students out of 968 applications for a fully-funded PhD program.
- **1st Prize**: in the Kaggle competition "EEML 2019 - Electricity prediction".
- **Best Smart Mobility Project**: awarded at UniHack 2019 for the project entitled "Wave".
- **Honour Student**: awarded in 2018 by Association "Orizonturi Universitare" in partnership with Romanian Academy and Timisoara City Council for outstanding achievements in my professional activity.
- **Grand Prize**: awarded at HackTM Sibiu 2018 edition, for the project named "SafeStreet".
- **Second place**: awarded at national competition "Java competition for universities 2018" organized by Oracle Academy for the project named "SPark - Community-Driven Smart Parking". This project appeared on multiple news websites.
- **Performance Scholarships**: awarded in 2015-2019 by Politehnica University of Timisoara and **Special Scholarship** awarded in 2018 for obtaining extraordinaire results at national contests.
- **Honors Diploma**: awarded in 2015 by Sebis Town Hall for increasing the prestige of the high school and town by the results obtained in Informatics/Mathematics competitions.
- **International Contest of Mathematics and Informatics "Caius Iacob"**: **1. Programming**: **"Second place"** in the VI Edition and **"Mention"** in the VII Edition. **2. Mathematics**: **"Second Place"** in VII Edition.
- **Informatics Olympiad county phase**: **"Mention"** in 2014 and **"Second place"** in 2015.

Reviewing

- CVPRw 2022 (L3D-IVU), ECCV 2022.

Selected Projects

- **"SafeStreet"**: is a project that detects violence in videos by using a drone and a neural network. **Technologies: Python, Keras, Shell script, OpenCV, NumPy.**
- **"Wave"**: is a project that reduces the physical interaction between a driver and the mobile phone by using the mobile phone's camera to detect hand gestures using neural networks. **Technologies: Python, Android, PyTorch, NumPy.**
- **"HybridAlpha"**: is an hybrid based on AlphaGo Zero and AlphaZero and it improves the performance of AlphaZero on resource-constrained systems. **Technologies: Python, TensorFlow, NumPy.**
- **"Music Prediction"**: is a neural network system that predicts the popularity of a song considering the metadata, the lyrics and the melody of a song. **Technologies: Python, PyTorch, Spotify API, Genius API, NumPy, Pandas.**
- **"What Neural Networks can not learn?"**: is a project that investigates what current CNNs can not learn by studying them from multiple perspectives. **Technologies: Python, PyTorch, NumPy, Matplotlib.**

Additional Courses, Workshops and Summer Schools

- **Bitdefender**: I was selected to attend Cybersecurity courses at Bitdefender (acceptance rate <10%). Learned to debug applications/malware using assembly code. **Technologies: Ida Pro, Shell script and Android.**
- **Microsoft Timisoara**: I was selected to attend a Software development course by Microsoft Timisoara (acceptance rate <6.6%). Learned to develop applications using C# and Bing Maps. **Technologies: C#.**
- **Eastern European Machine Learning Summer School (EEML)**: I was accepted to attend EEML, organised mainly by Google DeepMind in 2019 (admission rate 21%), being among the only 10 undergrads selected. I was also selected and attended the 2022 edition.