

# Otniel-Bogdan Mercea, Ph.D.(current)

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## EDUCATION

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- **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

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- **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

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- **CoRL 2022:** "Learning an Explainable Planner for Autonomous Driving". Katrin Renz, Kashyap Chitta, **Otniel-Bogdan Mercea**, A. Sophia Koepke, Zeynep Akata, Andreas Geiger.
- **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. /🔗.

## TALKS

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- **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

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- **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".
- **Performance Scholarships** awarded in 2015-2019 by Politehnica University of Timisoara and **Special Scholarship** awarded in 2018 for obtaining extraordinary 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

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

## SELECTED PROJECTS

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- **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.
- **Hit Song 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 from multiple perspectives what current CNNs can not learn in non-distributional shift scenario. **Technologies:** Python, PyTorch, NumPy, Matplotlib.

## ADDITIONAL COURSES, WORKSHOPS AND SUMMER SCHOOLS

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