Andrei Liviu Nicolicioiu

Personal Data

E-mail	andrei.nicolicioiu@gmail.com
Phone	+40 751 015 824
Website	https://andreinicolicioiu.github.io/
Others	Scholar GitHub

Education

2016–2018	**MSc in Artificial Intelligence, Faculty of Automatic Control and Computer Science, University Politehnica of Bucharest**.
2012–2016	**BSc in Computer Science and Engineering, Faculty of Automatic Control and Computer Science, University Politehnica of Bucharest**.

Work Experience

Apr.2022–Oct. 2022	**Machine Learning Research Intern, Max Planck Institute for Intelligent Systems - Germany** Part of Empirical Inference department. Research causality inspired methods for systematic generalisation.
Oct.2016–Apr. 2022	**Machine Learning Researcher, Bitdefender, Romania** Part of a research team and my interests are in in deep learning methods with factorised and relational representations. I researched topics in video analysis, few-shot learning, GNNs for visual data, object-centric methods.
Jul.2015–Sep. 2015	**Image Processing Intern, Fotonation, Romania** Worked on a project for applying effects on videos based on depth information. I worked mainly on segmentation and seamless blending of images. Designed and prototyped (in Matlab) different algorithms then implemented them in C.

Publications

CLR @UAI 2022	**On the DCI Framework for Evaluating Disentangled Representations: Extensions and Connections to Identifiability** Cian Eastwood*, Andrei Nicolicioiu*, Julius Von Kügelgen*, Armin Kekic, Frederik Träuble, Andrea Dittadi, Bernhard Schölkopf. *Conference on Uncertainty in Artificial Intelligence (UAI) - Workshop on Causal Representation Learning (CRL 2022) (CRL @ UAI 2022)* Paper.
NeurIPS 2021	**Discovering Dynamic Salient Regions with Spatio-Temporal Graph Neural Networks** Iulia Duta*, Andrei Nicolicioiu*, and Marius Leordeanu. *Conference on Neural Information Processing Systems (NeurIPS 2021)* Paper. Code
ORLR @NeurIPS 2020	**Dynamic Regions Graph Neural Networks for Spatio-Temporal Reasoning** Iulia Duta*, Andrei Nicolicioiu*, and Marius Leordeanu. *NeurIPS 2020 Workshop on Object Representations for Learning and Reasoning (ORLR @ NeurIPS 2020)* Paper
NeurIPS 2019	**Recurrent Space Time Graph Neural Networks** Andrei Nicolicioiu*, Iulia Duta*, and Marius Leordeanu. *Conference on Neural Information Processing Systems (NeurIPS 2019).* Paper. Code
BMVC 2018	**Mining for meaning: from vision to language through multiple networks consensus** Iulia Duta*, Andrei Nicolicioiu*, Simion-Vlad Bogolin and Marius Leordeanu. *British Machine Vision Conference (BMVC 2018).* Paper

Research Projects

2021 **Demixing object-centric representations.**
Research object-centric representations and investigate the properties of models trained with an additional loss for demixing combined images.

2020 **Effective Receptive Field for Graph Neural Networks**
With Iulia Duta
Study the effective receptive field of graph convolutional networks and self-attention layers and its impact on learning stability. Report

2020 **GNN conditioning for few-shot learning**
With Armand Nicolicioiu
Research in few-shot learning by developing a method that uses GNNs to adapt the features of a given sample to a context given by class prototypes. Report. Code

2018 **Describing videos in natural language**
Master Thesis - UPB. Advised by Prof. Marius Leordeanu
Study pretraining by reconstructing sentences from shuffled keywords. Develop ranking system based on learned video-sentence similarities.

2018 **Analysing EEG signal**
With Nicolae Cudlenco and Marius Leordeanu
Investigate the interplay between standard and learned features for EEG classification.

2017 **Multi-label classification in video**
With Iulia Duta and Marius Leordeanu
Study recurrent models for multi-label prediction. Investigate clustering of the network predictions using learnt or predetermined class correlations.

2016 **Deep Occlusion Region Detection in Video**
Bachelor's Thesis - UPB. Advised by Prof. Marius Leordeanu
Develop a method for detecting occluded zones in a video using a fully convolutional model with multi-model input and feature alignment by optical flow.

Awards

2016, 2018 UPB Student Research Competition - Artificial Intelligence - First Prize(2018), Second Prize(2016)

2014, 2015 South Eastern European Mathematical Olympiad - Silver Medal (2014), Bronze Medal(2013)

2013 Intel Perceptual Computing Projects Award - 1st Place

2009, 2010, 2012 National Mathematics Olympiad of Romania - Bronze Medal

2006 - 2012 Finalist in National Olympiad in Informatics (2006) Physics (2009, 2011), Mathematics (2007, 2009-2012)

Teaching Experience

2019 - present	Industry Invited speaker at University of Bucharest. *Deep Learning* course taught by me and my colleagues at Bitdefender. Presented three lectures on GNNs and Deep Learning methods for Computer Vision. Proposed laboratory and homework assignments and mentor students on their final course project.
2017 - present	Teaching Assistat at UPB. *Signal Processing* course taught by Prof. Marios Choudary. Propose assignments and assist students with the laboratory work, propose homework assignments and advise and grade the students final course projects.
2019, 2020	Teaching Assistat at Eastern European Machine Learning Summer School (EEML). Assisted students with the laboratory assignments.
2019	Supervise Bachelor's Thesis at UPB. With Marius Leordeanu, co-supervised Armand Nicolicioiu on his Bachelor's thesis: *Meta-Learning for Few-Shot Classification.*

Talks

Aug. 2022	*On the DCI Framework for Evaluating Disentangled Representations: Ex- tensions and Connections to Identifiability.* Poster at UAI CRL Workshop 2022, Eindhoven.
Dec. 2021	*Discovering Dynamic Salient Regions for Spatio-Temporal Graph Neural Networks.* Poster at NeurIPS 2021 (Virtual).
Jul. 2021	*Graph Neural Networks and Transformers in Vision.* Human Pose Recovery and Behavior Analysis Group - University of Barcelona
Jun. 2021	*Introduction to Graph Neural Networks.* Strasbourg Deep Learning Meetup.
Dec. 2019	*Recurrent Space Time Graph Neural Network.* Poster at Conference on Neural Information Processing Systems (NeurIPS 2019), Vancouver, Canada.
Sep. 2018	*Mining for meaning: from vision to language through multiple networks consensus.* Poster at *British Machine Vision Conference (BMVC 2018)*, Newcastle, UK.
Nov. 2017	*Describing images and videos in natural language*, Presented at Bucharest Computer Vision Group, "Simion Stoilow" Institute of Mathematics of the Romanian Academy.
July. 2017	*Overview of multi-label classification in video.* Presented at Bucharest Deep Learning Meetup, University of Bucharest, Romania.
Feb. 2017	*Learning to segment and refine*, Presented at Bucharest Computer Vision Group, "Simion Stoilow" Institute of Mathematics of the Romanian Academy.

Other

Reviewer	ICCV 2019, AAAI 2020, CVPR 2020, ECCV 2020 (top reviewer), ICML GRL+ 2020, NeurIPS 2020, AAAI 2021, ICLR 2021, ICML 2021, NeurIPS 2021, TPAMI, CoLLAs 2022
Programming	Python, PyTorch, TensorFlow, Matlab, C