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[Google Scholar \(250+ citations\)](#)

Age: 32 years (Born: 10.09.1991)



Alina – Elena Marcu

7th year PhD Student

INTRODUCTION

I am a PhD student at the Institute of Mathematics of the Romanian Academy, coordinated by Prof. Dr. Marius Leordeanu. My research interests revolve around subjects such as semi/self/un/supervised learning methods, with a focus on multiple representation learning for scene understanding from aerial videos. I am grateful to be part of a young and highly motivated team striving to make groundbreaking contributions in the field of Artificial Intelligence. More about us on our website: <https://sites.google.com/view/spacetime-vision-robotics-lab>

EDUCATION

PhD Student, Institute of Mathematics “Simion Stoilow” of the Romanian Academy, Romania (IMAR) 2017 - present
Master’s Degree in Artificial Intelligence, University Politehnica of Bucharest, Romania (UPB) 2014 - 2016
Bachelor Degree in Computer Science, University Politehnica of Bucharest, Romania (UPB) 2010 - 2014
Baccalaureate Diploma, “Mihai Viteazul” National College, Bucharest, Romania (CNMV) 2006 – 2010

RESEARCH / TECHNICAL EXPERIENCE

(January 2022 – December 2023) Research Assistant (IMAR) / Project: UEFISCDI Grant PN-III-P4-ID-PCE-2020-2819, 2021-2023 (250K Euro), „HyperVision: Unsupervised Visual Learning through Intelligent Equilibrium in Hypergraphs of Neural Networks”

- Developed a state-of-the-art learning mechanism for finding a synergy between multiple representations of the real world from aerial videos using a hypergraph of neural networks. We also published Dronescares, a large-scale dataset with real-world videos from UAVs for multi-task learning.

(January 2019 – December 2021) Research Assistant (UPB) / Project: EEA and Norway Grant 2019-2022: EEA-RO-2018-0496 (1.5 Million Euro) “Spacetime Vision – Towards Unsupervised Learning in the 4D World”

- Ambitious research project in which we tackle the difficult task of leveraging consensus over multiple dense visual representations, in the context of multi-task learning, while also taking into account the temporal dimension, in order to generate a robust algorithm that would only need additional RGB videos (semi/self-supervised learning) at the input for improved overall performance and also consistent predictions throughout time.

(December 2016 – December 2018) Research Assistant (Fordaq S.A.) / Project: European Funds Grant 2019-2021: POC/524/2/2 (1.2 Million Euro), - „*Neural Grader - Automated System for Semantic Analysis and Grading of Wood in Images using Efficient Computer Vision Methods and Deep Neural Networks*”.

- Develop technologies for precise detection and measurement of planks (**TallyExpress**) and logs (**LogSize**) from images captured by mobile devices, using Computer Vision and Deep Learning techniques. Build optimized models so that the whole solution ran directly on the user's mobile device in real time. While a member of the R&D we won the **Neural Grader** project, in which I developed a solution for multiple defect types precise segmentation, to improve grade quality estimation in order to reduce prime material waste.

(January 2015 – December 2018) Research Assistant (Autonomous Systems) / Project: European Funds Grant 2015-2019: POC-A1.2.1D-2015-P39-287 (1 Million Euro) – „*Automatic interpretation of images and video sequences using natural language processing*” (PI with Traian Rebedea)

- Worked on remote sensing problems (due to the lack of data), particularly object detection, and scene semantic segmentation (houses, roads, and vegetation) using a combination of deep learning algorithms combined with mathematical optimization for forming road graphs. I was also in charge of building the first-of-its-kind multi-class video semantic segmentation dataset—Ruralscapes (publicly available). I designed NNs and improved the semantic segmentation algorithms to run in real-time on embedded devices.

SKILLS

Tools and Languages	Python, Java, Matlab, C++, Git, Latex
Research Expertise	CV, Scene Understanding, Multi-task Unsupervised Learning, Deep Learning, Robotics (UAVs), NLP
Communication	Romanian (native), English (fluent), French/Spanish (intermediate)

ACTIVITIES

Top-Conference Reviewer — AAAI, CVPR, ICCV, NeurIPS, IJCAI, ICLR, ICML, WACV, ACCV, T-PAMI 2017—present

US Patent— Automatic detection, counting, and measurement of lumber boards using a handheld device - No. 11,216,905 2022

Invited speaker — SSIMA — "TensorFlow - Keras programming course" 2019

Teaching assistant—Eastern European Machine Learning Summer School (EEML) 2019

Invited speaker — RAAI, University of Bucharest — "Automatic Annotation for Semantic Segmentation in Aerial Videos" 2019

Best Paper Award at Computer Vision for UAVs Workshop, ICCV — Costea, D., Marcu, A., Slusanschi, E., & Leordeanu, M. (2017). *Creating roadmaps in aerial images with generative adversarial networks and smoothing-based optimization.* 2017

Dissertation Thesis—"A local-global approach to semantic segmentation in aerial images", which won First Prize in The Session of Special Scientific Communications 2016

Bachelor Thesis— "Complex activity recognition using a Kinect camera" 2014

Lucian