Andrei Manolache

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EDUCATION

University of Bucharest, Faculty of Mathematics and Computer Sciences Jun 2021
M.Sc. in Artificial Intelligence, Valedictorian Distinction
Relevant coursework: Probabilistic Programming, Theoretical Machine Learning, Knowledge Representation & Reasoning, Statistical Learning, Deep Learning, Information Retrieval, Text Mining, Geometric Deep Learning
Models: Deep Neural Networks, Bayesian Neural Networks, Probabilistic Graphical Models, Time Series, Classical Models, Knowledge-Base Methods
Thesis: Deep Anomaly Detection in Text (ENG), Grade 10/10
Teacher Assistant (TA): Deep Learning (ENG), Advanced Machine Learning (ENG), Operating Systems (RO)

University of Bucharest, Faculty of Mathematics and Computer Sciences Jun 2019
B.Sc. in Mathematics and Computer Sciences, First Class Honours
Relevant coursework: Real and Complex Analysis, Measure Theory, Probabilities, Mathematical Statistics, Differential Geometry, Linear & Abstract Algebra, Differential Equations, Operations Research, Numerical Methods, Cryptography, Algorithms & Data Structures, Object-Oriented Programming, Databases, Machine Learning, Deep Learning
Thesis: Autonomous Driving, Ackermann-Steered Vehicle (RO), Abstract (ENG), Grade 10/10
Tutor: Procedural Programming

PUBLICATIONS AND PATENTS

DATE: Detecting Anomalies in Text via Self-Supervision of Transformers.
Andrei Manolache, Florin Brad, Elena Burceanu   NAACL-HLT 2021 & ICML 2021 UDL Workshop

Transferring BERT-like Transformers' Knowledge for Authorship Verification.
Andrei Manolache, Florin Brad et al.   Under Review

ICLR 2021 Challenge for Computational Geometry & Topology: Design and Results.
Nina Miolane, et al. [including Andrei Manolache]   arXiv preprint

Anomaly Detection Systems And Methods.
Andrei Manolache, Florin Brad, Elena Burceanu, Alexandru Novac   (pending) US Patent Application no. 17/301.641, Filled 04/09/2021

WORK EXPERIENCE

BITDEFENDER | Deep Learning Research Scientist   Oct 2019 – Present
- I'm doing research on deep neural language models trained via self-supervised learning for anomaly detection and more general representation learning.
- Various projects dealing with authorship detection, topic modelling and anomaly detection on text and heterogenous data.
- Recent research directions include XAI and Domain Adaptation & Generalization.

NXP SEMICONDUCTORS | Vision & ADAS Software Engineer   May 2019 - Oct 2019
- I've worked on the automotive neural network inference engine that's using NXP's hardware accelerator. I've worked on the core engine that was written in C and C++ and also explored methods for neural network quantization, pruning and optimization.

NXP SEMICONDUCTORS | OS Software Engineer Intern   Feb 2018 - May 2019
- I've built an autonomous driving, Ackermann-steered, 1/10 scale car using the Robot Operating System and Linux. The project required state-of-the-art planning, SLAM and computer vision algorithms. I wrote the code in Python and C++. This project was my B.Sc. thesis.

PROJECTS, AWARDS AND MISCELLANEA

DARWIN DEEP LEARNING, NLP, AUTHORSHIP DETECTION, ANOMALY DETECTION, FEW-SHOT LEARNING

I'm a member of Project DARWIN, funded with 246.000€by Romania's Ministry of Education. We're developing forensics methods which can help identify and profile the activity of cyber-criminals on the Dark Web and map it to their activity in the Clear Web in order to monitor and combat cyber-crimes. This is a joint project between the University of Bucharest and Bitdefender.

EEML 2021 - BEST POSTER AWARD DEEP LEARNING, ANOMALY DETECTION, NLP

I got the best poster award at the 2021 edition of the East European Machine Learning Summer School.

ICLR 2021 COMPUTATIONAL GEOMETRY & TOPOLOGY CHALLENGE TDA, GEOMETRIC LEARNING

Our challenge submission, Topological noise invariant features using Giotto-TDA and Geomstats, was awarded the 1st place at the ICLR 2021 Computational Geometry & Topology Challenge. We showcased a pipeline for extracting Perturbed Topological Signatures (PTS) using Geomstats and Giotto-TDA and analyzed the robustness of these representations.

PYTORCH GLOBAL SUMMER HACKATON 2020 DEEP LEARNING, CV, NLP, VQA

Our hackaton submission, Q&Aid, was awarded the 1st place at the PyTorch Global Summer Hackaton 2020. Q&Aid is a conversational agent that relies on a series of machine learning models to filter, label and answer medical questions. My contribution was doing the research on various models (VQA, Vision) and help integrate them to the project.

STUDENTS SCIENTIFIC COMMUNICATIONS SESSION 2019 & 2021

I was awarded the 1st place at the Faculty of Mathematics and Computer Sciences' Students Scientific Communications Session twice: for my bachelor's thesis in 2019, and for my master's thesis in 2021.

MATHEMATICAL STATISTICS READING GROUP 2019 MATHEMATICAL STATISTICS

I've co-organized a students' mathematical statistics reading group in 2019 at the University of Bucharest and Politehnica University of Bucharest.

CONFERENCES, SUMMER SCHOOLS & TALKS

Talks: Bucharest Deep Learning 2021, Bitdefender Micro-Conference 2021 (internal), NitroNLP 2022
Posters: NAACL-HLT 2021, ICML 2021 UDL Workshop, PyTorch Ecosystem Day 2021, EEML 2021, EEML 2019, RAAI 2019
Attendee: ML in PL 2019

TECHNICAL SKILLS

Advanced: PyTorch, Python, Linux, C, C++
Intermediate: R, Prolog, JavaScript, HTML & CSS, SQL, MatLab, ROS
Misc: LaTeX, Git, Office, Photoshop

LANGUAGE SKILLS

Romanian: Native
English: Proficient
French: Basic (simple words and phrases)

SOFT SKILLS

Teaching Assistant Coordinator: I coordinated student team projects during my time as a TA at the University of Bucharest.
Acting, debating: I took acting classes and was part of an theatrical troupe during my gymnasium and highschool studies. I got various debate awards during highschool.
Civics, volunteering: I was a member of the European Youth Parliament during highschool. I've participated in three sessions - twice as a delegate and once as a chairperson. I was a volunteer at the the Local Youth Council in my hometown of Targu-Neamt, where we organized various community events and services.