

Alex Burlacu

MACHINE LEARNING TEAM LEAD · SOFTWARE ENGINEER

Studentilor 1/1, Chişinău, Rep. of Moldova

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Summary

Currently working as Machine Learning Team Lead at DevelopmentAid and as a University Assistant at the Technical University of Moldova. 4+ years of experience with machine learning techniques applied to diverse problems, ranging computer vision, natural language processing and time series forecasting. I like to take full responsibility for projects and work on all levels of the technological stack, and along all the steps of the workflow. Love to mentor people and give feedback whenever needed.

Work Experience

Technical University of Moldova

Chişinău, Rep. of Moldova

UNIVERSITY ASSISTANT & JUNIOR RESEARCHER

Sep. 2019 - Present

- (Autumn 2019) Teaching network programming course and labs (concurrency primitives and network protocols).
- (Spring 2020) Developed and teaching real-time programming course (message-based concurrency and message-oriented integration patterns).
- (Summer 2020) Preparing distributed systems course update and labs.
- (Autumn 2020) Teaching distributed systems course and network programming course and labs. Mentoring 5 people for their semester project, 2 of them for their bachelor project.
- As of January 2020 I am a junior researcher in a laser-physics related project, trying to develop machine learning tools to accelerate laser-physics simulations.

DevelopmentAid

Chişinău, Rep. of Moldova

MACHINE LEARNING ENGINEER / TEAM LEAD (SINCE JULY 2020)

Aug. 2019 - Present

- Implemented Machine Learning algorithms for natural language processing, like text classification and named entity recognition, to automate data entry for tenders.
- Implemented a process of fast data annotation and dataset synthetic enrichment to rapidly increase the dataset size from a handful of well-annotated documents to more than a hundred.
- Developed and productionized 3 ML microservices. One of them based on an adapted BERT model, used for Named Entity Recognition.
- Built and deployed overall service infrastructure utilizing Docker containers, docker-compose, and some bash scripts. Implemented a unified tracing and logging infrastructure based on Jaeger, Kibana and Elastic to allow for fast and easy troubleshooting.
- Since July 2020 leading and mentoring a team of 3 junior engineer assigned with tasks of automating data entry, scaling the production services and developing a data lake. Established a culture of code reviews, monthly 1:1s, workshops and code standards.

AaHa Inc.

Chişinău, Rep. of Moldova

DATA SCIENTIST (TIME SERIES FORECASTING)

Nov. 2018 - Feb. 2019

- Applied statistical models, like ARIMA and ETS, and machine learning (stacked ensembles and custom neural networks using TensorFlow and Keras) algorithms for ads eCPM price forecasting.
- Provided per-project reports on experiment progress directly to executive management and was proposing the next actions.
- Developed 2 serving proof of concept, one using PMML and another TensorFlow Serving.
- Due to the lack of reliable data the project was frozen.

CERN

Meyrin, Switzerland

SUMMER INTERN

Jul. 2018 - Aug. 2018 (2 months)

- Associate Member of the EP-SFT group. UK Science and Technology Facilities Council (STFC) grantee.
- Project Description: "Benchmarking TMVA package against TensorFlow on event-by-event inference performance on multi-layered perceptrons for HEP".
- Project Purpose: Find the bottlenecks and future directions of optimization for the TMVA subpackage of the ROOT scientific package.
- Project findings: For one-by-one and small batch (< 32) inference modes, TMVA is up to 2 orders of magnitude faster than TensorFlow 1.8, built from source with AVX512 enabled, using C++ inference API.
- GitHub repo: github.com/AlexandruBurlacu/cern-tmva-v-tensorflow-benchmark.

Redox Entertainment Inc.

Chişinău, Rep. of Moldova

MACHINE LEARNING ENGINEER

Oct. 2017 - Sep. 2018

- Research and Development of neural networks for Computer Vision (Medical Image Analysis of oocytes for IVF) problems. Developed numerous bespoke neural network architectures, using unsupervised pre-training techniques like pre-training with autoencoders and even siamese networks for self-supervised learning. Also used cyclic learning rates.
- The dataset was made of few (600 images) medical images with very low variance between positive and negative class. Initial experiments, even with pre-trained models on ImageNet were no better than random choice. The specialized neural architecture developed by me was on par with Google's Vision AutoML, that is, state of the art, achieving 68.7% accuracy.
- Used TensorFlow + Keras and Docker containers.
- Directly reported to the company director and was always involved in discussions about ways to increase the performance of our models with invited experts, mostly PhDs.
- Mentored and trained an intern for 3 months. Now he's part of the team, also working on deep learning related projects.

FAF NGO

Chişinău, Rep. of Moldova

CO-FOUNDER AND CORPORATE & FINANCIAL RESPONSIBLE

Sep 2017 - Oct. 2018

- Starting May 2017 I was leading the team responsible for founding the NGO, prepared all documentation required at the ministry of justice for registration, drafted the internal code of conduct and the long-term strategic plan.
- Starting September 2017 was assigned as the Corporate and Financial Responsible, leading the efforts for finding long- and short-term partners for the non-profit.
- Defined 2 budget templates, for an open lectures series, and hackathons.
- Also proposed and supported a new annual hackathon and a student internship program.

BookVoyager (Startup)

Chişinău, Rep. of Moldova

Co-FOUNDER AND CTO

May 2017 - Sep. 2017

- BookVoyager was a recommendation/search system for fiction books that extracts features from raw text and based on these gives a recommendation.
- As the CTO I was responsible for defining the technological stack and the architecture of the solution, namely the Mongo as the database engine, an API service written in Flask and the search engine, communicating via RPC + logging set up to allow for troubleshooting.
- I also developed the feature extraction and recommendation sub-systems.
- Was actively involved in customer interviews, defining business and development processes and was pitching the project at various venues.
- The project was named the best startup of the Founder Institute Chisinau 2017 semester.

Education

UTM(Technical University of Moldova) joint degree with USV(Ştefan cel Mare University Suceava)

Chişinău, Rep. of Moldova, Suceava, Romania

M.E. IN COMPUTER SCIENCE AND ENGINEERING

Sep. 2019 - Jun. 2021

- Researched and developed a system combining information retrieval, self-supervised and few-shot learning techniques to achieve well-performing deep learning models with very little samples.

Aalborg Universitet

Aalborg, Denmark

B.S IN ROBOTICS

Jan. 2019 - Jun. 2019

- Erasmus+ student exchange program.
- Got familiar with the Project Based Learning paradigm.

UTM(Technical University of Moldova)

Chişinău, Rep. of Moldova

B.E. IN COMPUTER SCIENCE AND ENGINEERING

Sep. 2015 - Jun. 2019

- Studied at the English Taught Honors Program in Computer Science.

Publications

Bringing together few-shot learning and self-supervision for greater sample efficiency

Workshop presentation

ALML WORKSHOP @ WCCI/IJCNN 2020

July 2020

- Presented the existing solutions and actual problems that need be solved in order to make few-shot learning useful for tackling general machine learning problems

Overview of Computer Vision Supervised Learning Techniques for Low-Data Training

Workshop presentation/Accepted to the Journal of Engineering Science

ML APPLICATIONS WORKSHOP @ IC-ECCO 2019

September 2019

- An overview of different methods of how to reduce the need for labeled data for efficient computer vision deep learning algorithms.

Extracurricular Activity

IT professional's day @ Technical University of Moldova

Chişinău, Rep. of Moldova

MAIN ORGANIZER

Jun. 2018 - Sep. 2018

- Organized an event for almost 200 people with 6 workshops and a party with an invited rock band and a DJ.
- Managed a team of 5 people to prepare the event.
- Liaised with the administration of the Technical University of Moldova and the venue provider - Tekwill.

Coder Dojo Chişinău

Chişinău, Rep. of Moldova

MENTOR

Jan. 2017 - Jun. 2018

- Taught mobile development to a group of gymnasium/middle-school students between January and June 2017.
- Taught fundamentals of programming using C language to a group of gymnasium and lyceum students between October 2017 and June 2018.

FAF Hackathon (actually 2 of them)

Chişinău, Rep. of Moldova

CO-ORGANIZER/FUNDRAISER

Nov-Dec. 2016 and Nov-Dec. 2017

- Helped raising funds for FAF Hackathons, mainly from the Technical University of Moldova.
- Defined the budget template, the list of tasks, and the timeline for future editions of the event (6 hackathons, as of Summer 2020).

Moldova Data Science Community meetups

Chişinău, Rep. of Moldova

CO-ORGANIZER/SPEAKER

Jan. 2017 and Jun. 2017

- Organized 6 meetups with an average number of attendees of 15-20 people.
- Presented at 3 of the meetups, topics included feature selection techniques, distributed deep neural network training, and the inner workings of linear and logistic regression.