



Marius-Claudiu Popescu

Nationality: Romanian **Date of birth:** 1989

Home: Cluj (Romania)

WORK EXPERIENCE

Consultant

[2022 – Current]

Designing and implementing machine learning algorithms and systems.

Machine Learning Software Engineer

Connatix [2020 – 2022]

City: Cluj-Napoca

Country: Romania

I was involved in the design, implementation and deployment of multiple natural language processing and machine learning-based features and products.

Most of my work was on the Deep Contextual engine (<https://www.connatix.com/deep-contextual>)

Main technologies used: PyTorch, TensorFlow, scikit-learn, spaCy, flairNLP

Machine Learning Software Engineer

Rubrikk Group [2018 – 2020]

Selected projects

A machine learning price prediction model (and REST API) for used cars. Developed in C# using ML.NET.

Statistical computations over large datasets of property and cars classifieds using Google Big Query and different statistical methods and algorithms (isotonic regression, smoothing etc.)

Software Engineer

Hewlett Packard Enterprise/Microfocus [2017 – 2018]

I contributed to Server Automation and Data Center Automation software suites. Development was mostly in Python.

Big Data/Machine Learning Software Engineer

iQuest Technologies [2015 – 2017]

Selected projects:

Python framework for rapid development of scalable distributed applications on top of Amazon Web Services.

Python application for relevant terms extraction from streaming text data using the TF-IDF technique (implemented using Numpy for numerical computation and NLTK for preprocessing).

Scala application for topics extraction and summarization of documents, based on Spark.

Software Engineer

Arabs Transilvania Software [2012 – 2015]

Programming in ANSI C for automotive embedded systems.

EDUCATION AND TRAINING

Ph.D

Technical University of Cluj-Napoca [2016 – 2022]

City: Cluj-Napoca

Country: Romania

Field(s) of study: Information and Communication Technologies

Thesis: Convex optimization and learning theory methods for prediction and text summarization

- Interpretable machine learning
- Convex optimization for automatic text summarization
- Geometric techniques for machine learning
- Quantum learning theory

M.S.

Technical University of Cluj-Napoca [2012 – 2014]

City: Cluj-Napoca

Country: Romania

Final grade: 9.16 (out of 10)

- Signal processing
- Image and audio data processing
- Machine learning

B.S.

Technical University of Cluj-Napoca [2008 – 2012]

City: Cluj-Napoca

Country: Romania

Final grade: 9.17 (out of 10)

- Electronics engineering
- Telecommunications engineering
- Programming
- Information theory

LANGUAGE SKILLS

Mother tongue(s): **Romanian**

Other language(s):

English

LISTENING C2 READING C2 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

Publications

[An algorithm for training a class of polynomial models](#)

[2023]

Journal: Digital Signal Processing, Elsevier

Summary: The paper describes a new learning bound for a class of polynomial networks. The bound is used to derive an efficient training algorithm. The models produced by the algorithm have in general better interpretability properties than general neural networks.

[Learning bounds for quantum circuits in the agnostic setting](#)

[2021]

Journal: Quantum Information Processing, Elsevier

Summary: The paper contains a theoretical investigation of the learnability of quantum circuits when no realizability assumptions are made. Several learning bounds are derived, with a relatively weak dependence on the circuits parameters.

[A Highly Scalable Method for Extractive Text Summarization Using Convex Optimization](#)

[2021]

[Word Embeddings for Romanian Language and Their Use for Synonyms Detection](#)

[2021]

[Conformal transformation of the metric for k-nearest neighbors classification](#)

[2020]

[On the use of positive definite symmetric kernels for summary extraction](#)

[2020]

[Automatic Text Summarization by Mean-absolute Constrained Convex Optimization](#)

[Communication protocol for wireless sensor networks for energy consumption optimization](#)

JOB-RELATED SKILLS

Job-related skills

Programming languages:

Professional experience with: Python, C# and ANSI C,
and some degree of familiarity with: C++, Scala, Matlab and Java

I have used professionally or for research the following systems, tools, frameworks and libraries:

Machine learning/scientific computing/analytics frameworks/libraries:

PyTorch, TensorFlow, Keras, NumPy, SciPy, Scikit-learn, Pandas, Spark MLlib, Spark GraphX, Scala Breeze, ML.NET, Matlab toolboxes for statistics, machine learning and signal processing

Natural language processing frameworks/libraries:

NLTK, Flair NLP, SpaCy, Gensim

Big data frameworks/libraries/tools:

Spark, Hadoop, Google Big Query

Database management systems:

SQL Server, PostgreSQL, Azure Storage, Mongo

Cloud computing:

AWS, Azure

Containerization and orchestration:

Docker, Kubernetes

I have very good knowledge of different machine learning and natural language processing algorithms, and their mathematical and theoretical foundations.

OTHER RELEVANT ACTIVITIES

Other relevant activities

I served as a reviewer for the journal Applied Soft Computing.

PROFESSIONAL AND RESEARCH INTERESTS

Professional and research interests

Machine learning (theory and applications);

Natural language processing;

Mathematical optimization (in particular for NLP and ML);

Algorithm design and analysis (in particular related to the above fields).
