



# Alexandra-Ioana Albu

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Github: <https://github.com/alexandraalbu>

## WORK EXPERIENCE

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### University research assistant

**Babeş-Bolyai University** [ 10/2023 – Current ]

City: Cluj-Napoca | Country: Romania

Working in the "Research Institute on Artificial Intelligence, Virtual Reality and Robotics"

### Teaching assistant

**Babeş-Bolyai University** [ 10/2020 – Current ]

Laboratories and seminars for the following courses:

- *Data Structures and Algorithms* (labs and seminars)
- *Functional and Logic Programming* (labs and seminars)
- *Development Methods for Intelligent Systems* (labs)
- *Computational Logic* (seminars)
- *Fundamentals of Programming* (labs)
- *Object-Oriented Programming* (labs)

### University research assistant

**Babeş-Bolyai University, Faculty of Mathematics and Computer Science** [ 10/2020 – 08/2023 ]

Member in the *WeaMyL* Project ("*WeaMyL - Enhancing the performance and reliability of national weather warning systems by use of deep learning techniques applied on radar, satellite and ground meteorological observations*"), supported by the Norway Grants Program 2014-2021 (1.084.919 EUR), website: <https://weamyl.met.no/>

#### Publications:

- Gabriela Czibula, Andrei Mihai, Alexandra-Ioana Albu, Istvan-Gergely Czibula, Sorin Burcea, Abdelkader Mezghani, *AutoNowP: An approach using deep autoencoders for precipitation nowcasting based on weather radar reflectivity prediction*. Mathematics, Special Issue on Computational Optimizations for Machine Learning, 2021, 9(14):1653.
- Alexandra-Ioana Albu, Gabriela Czibula, Andrei Mihai, Istvan-Gergely Czibula, Sorin Burcea, Abdelkader Mezghani. *NeXtNow: A Convolutional Deep Learning Model for the Prediction of Weather Radar Data for Nowcasting Purposes*. Remote Sensing, 2022, 14(16): 3890.
- Alexandra-Ioana Albu. Improving radar echo extrapolation models using autoencoder-based perceptual losses. 27th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems 2023, *Procedia Computer Science*, vol. 225, pp 1611-1620.

### University research assistant

**Babeş-Bolyai University, Faculty of Mathematics and Computer Science** [ 03/2021 – 12/2023 ]

Member in the *QuaDeeP* Project ("*QuaDeep - Enhancing the quality of software systems using deep learning models for defects prediction and detection*") - Exploratory research project financed within PNCDI III - project number PN-III-P4-ID-PCE-2020-0800 (1.198.032 RON), website: <https://www.cs.ubbcluj.ro/quadeep/>

#### Publications:

- Alexandra-Ioana Albu. Temporal Ensembling-based Deep k-Nearest Neighbours for Learning with Noisy Labels. *31st European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning*, 2023.

## Research assistant

**Romanian Institute of Science and Technology** [ 11/2018 – 09/2020 ]

Member in the *DeepRiemann* Project ("*Riemannian Optimization Methods for Deep Learning*"), co-funded by the European Regional Development Fund and the Romanian Government through the Competitiveness Operational Programme 2014-2020 (8.689.500 RON), website: <https://deepriemann.rist.ro/>

### Publications:

- Alexandra-Ioana Albu, Alina Enescu, and Luigi Malagò. Tumor detection in brain MRIs by computing dissimilarities in the latent space of a variational autoencoder. In Proceedings of the Northern Lights Deep Learning Workshop, vol. 1, pp. 1-6. 2020.
- Alexandra-Ioana Albu, Alina Enescu, and Luigi Malagò. Improved Slice-wise Tumour Detection in Brain MRIs by Computing Dissimilarities between Latent Representations. 2020 KDD Workshop on Applied Data Science for Healthcare, August 24, 2020, San Diego, USA.
- Alexandra-Ioana Albu, Alina Enescu, and Luigi Malagò. Detection of Tumours in Brain MRIs with Variational AutoEncoders. ECML PKDD 2020 Workshop on Machine Learning for Pharma and Healthcare Applications, September 14, 2020, Ghent, Belgium.

## Machine Learning Intern

**Romanian Institute of Science and Technology** [ 07/2017 – 09/2017 ]

Internship in the *Machine Learning and Optimization* group. Worked on a project on image generation using Variational Autoencoders.

## Teacher in the "Hai la Olimpiadă!" program

[ 03/2016 – 03/2016 ]

Held a seminar on inequalities for 8th grade students in the "*Hai la Olimpiadă!*" mathematics program

## EDUCATION AND TRAINING

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### PhD in Computer Science

**Faculty of Mathematics and Computer Science, Babeş-Bolyai University** [ 2020 – 2023 ]

City: Cluj-Napoca | Country: Romania

#### Research Topics:

- Representation Learning
- Learning with Noisy Labels
- Protein-protein Interaction Prediction
- Weather Nowcasting

### Master's Degree in Applied Computational Intelligence

**Faculty of Mathematics and Computer Science, Babeş-Bolyai University** [ 2018 – 2020 ]

City: Cluj-Napoca | Country: Romania

- Machine Learning
- Deep Learning
- Computer Vision
- Natural Language Processing
- Data Analysis

### Psycho-pedagogical training - Level II

**Babeş-Bolyai University** [ 2018 – 2020 ]

City: Cluj-Napoca | Country: Romania

## Bachelor's Degree in Computer Science

*Faculty of Mathematics and Computer Science, Babeş-Bolyai University* [ 2015 – 2018 ]

City: Cluj-Napoca | Country: Romania

## Psycho-pedagogical training - Level I

*Babeş-Bolyai University* [ 2015 – 2018 ]

City: Cluj-Napoca | Country: Romania

## Baccalaureate Diploma

*"Lucian Blaga" High School* [ 2011 – 2015 ]

City: Cluj-Napoca | Country: Romania

## LANGUAGE SKILLS

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**Mother tongue(s):** Romanian

**Other language(s):**

### English

LISTENING C2 READING C2 WRITING C2

SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2

### French

LISTENING B2 READING B2 WRITING B2

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

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

## AWARDS

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[ 2019 – 2020 ]

**Special Scholarship for Scientific Activity awarded by Babeş-Bolyai University**

[ 2011 – 2015 ]

**One silver medal and three bronze medals at the Romanian National Mathematical Olympiad**

[ 2024 ]

**Best Poster Award at the Eastern European Machine Learning Summer School**

[ 2015 – 2020 ]

**Scholarship for Academic Results awarded by Babeş-Bolyai University**

## PROJECTS

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**Contributor - Argo open source deep learning library**

Library implementing multiple deep learning models using TensorFlow and Sonnet, available at: <https://github.com/rist-ro/argo>