



PERSONAL INFORMATION Ioan-Mihail Dinu

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Sex M | Date of birth 21/12/1994 | Nationality Romanian

POSITION WITHIN THE PROJECT Member within the project**WORK EXPERIENCE**

01/02/2018–Present **Research Assistant**
IFIN-HH
Str. Reactorului nr.30, Magurele (România)
www.nipne.ro

Machine Learning on FPGA for the New Small Wheel Trigger Processor

-Developed a computer vision inspired Convolutional Neural Network for identifying muon tracks and a convolutional regression model for predicting candidate track information using Tensorflow.

-Researched model quantization options and optimization strategies for minimizing FPGA inference time.

Unsupervised Machine Learning for Anomaly Detection in BSM Searches

-Implemented Autoencoder-based anomaly detection ensemble methods for model independent multijet BSM searches.

-Combined several approaches, such as Normalizing Flow density estimation and regularized autoencoder reconstruction error, to successfully increase out-of-distribution detection performance, while mitigating model bias.

Data Pipeline Automation

-Designed complex automated data pipelines from Monte Carlo simulation to detector response modelling to neural network inputs and targets.

Business or sector Research, Particle Physics

EDUCATION AND TRAINING

01/10/2019–Present **PhD**
Faculty of Physics, University of Bucharest

PhD thesis: NSW muon detector Trigger Processor Performance study & Beyond Standard Model Searches Using Machine Learning in the ATLAS Experiment at LHC

(supervisor: Prof. Dr. CS1 Călin Alexa)

01/10/2017-01/07/2019

Master's degree

Faculty of Physics, University of Bucharest

Dissertation Thesis: Machine Learning Applications in High Energy Physics
(supervisor: Prof. Dr. CS1 Călin Alexa)

01/10/2014-01/07/2017

Bachelor's degree

Faculty of Physics, University of Bucharest

Diploma Thesis: Study of top-antitop quark pair production using Monte Carlo Simulations generated with PYTHIA
(supervisors: Lect. Dr. Roxana Zus, Prof. Dr. CS1 Călin Alexa)

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
French	A2	C1	A1	A1	B1
Replace with name of language certificate. Enter level if known.					

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
[Common European Framework of Reference for Languages](#)

Communication skills Successfully coordinated remotely with several working groups. Worked on multiple research projects concurrently, with very diverse teams in terms of languages spoken and ethnic identity.

Organisational / managerial skills Onboarding and supervision for several Master Students.

Job-related skills Data analysis in particle physics using ROOT, Monte Carlo event simulations
Linux/MacOS/Windows: administration, maintenance and troubleshooting
Programming: Python, C++/C, Bash, git, cmake, VHDL
Machine Learning: Tensorflow, Pytorch, QKeras
Data visualization: Plotly, matplotlib, Chart Studio, seaborn
Text processing: LaTeX, Microsoft Word, RST, HTML, AWK

Digital competence	SELF-ASSESSMENT				
	Information processing	Communication	Content creation	Safety	Problem solving
	Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

Levels: Basic user - Independent user - Proficient user
[Digital competences - Self-assessment grid](#)

Driving licence B

ADDITIONAL
INFORMATION

Publications <https://scholar.google.com/citations?user=iENCIAgAAAAJ&hl=en&oi=sra>

Conferences LHCP2021 Poster: **Event-Level Anomaly Detection for Multijet BSM Searches with Probabilistic Autoencoders**

Memberships ATLAS (A Toroidal LHC ApparatuS) Collaboration /CERN Geneva (2019–present)

Citations <https://inspirehep.net/authors/1888048>

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