



Joanikij Chulev

Date of birth: 25 Apr 2002 | **Place of birth:** Skopje, North Macedonia |

Nationality: Macedonian/citizen of the Republic of North Macedonia | **Phone number:**

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<https://www.linkedin.com/in/joanikij-chulev-a55a74334> | <https://github.com/JoanikijChulev>: GitHub |

WhatsApp Messenger: +38975235603 | **Address:** Italy (EU - Genoa, Italy (willing to relocate))

ABOUT ME

Multidisciplinary engineer and data scientist working at the intersection of software, electronics, and applied mathematics. BSc in Computer Science (AI & Data Science, Utrecht University; Math minor); currently MEng in Systems of Systems Engineering (EMSSE). Experienced in ML/DL (CV, RL), audio signal processing, and Python-centric data/automation. Hands-on with electronic design (op-amps, filters, LTSpice), simulation (ANSYS/CFD), and CAD (AutoCAD). Bridges theory and implementation to prototype, evaluate, and deploy robust and innovative data-driven solutions.

WORK EXPERIENCE

INTEC SYSTEM – SKOPJE, NORTH MACEDONIA

Business or Sector Professional, scientific and technical activities | **Address** St. Anton Popov No 16B, 1000 Skopje, Skopje, North Macedonia |

Email zlatko.efremov@intecsystem.com | **Website** <https://intecsystem.com/>

BI/DWH PROJECT ASSISTANT – 1 JAN 2023 – 31 OCT 2023

Review and analyses of BI/DWH systems in Sparkasse Bank and their utilization level

- In-depth analysis of complex data systems and identification of key issues and areas for improvement
- Data integration and modeling
- Data Quality Control and Monitoring

SOLS DOO SKOPJE – SKOPJE, NORTH MACEDONIA

Business or Sector Professional, scientific and technical activities | **Address** St. Kosturski Heroi No.2/2, 1000 Skopje, Skopje, North Macedonia |

Email nenad@sols.mk | **Website** <https://sols.mk/home>

DATA SCIENCE AND AI PROJECT "ATLAS" CONTRIBUTOR – 1 JUN 2023 – 15 NOV 2023

- cleaning and optimizing datasets
- annotating data
- providing invaluable feedback on responses
- conducting vital research for selecting the most suitable language model for AI's response

UNIVERSITY COLLEGE ROOSEVELT - UTRECHT UNIVERSITY – MIDDELBURG, NETHERLANDS

Business or Sector Education | **Department** Student Alumni | **Address** Lange Noordstraat 1, 4331 CB Middelburg, Middelburg, Netherlands |

Email info@ucr.nl | **Website** <https://www.ucr.nl/>

ASSISTANT FOR ALUMNI SURVEY – 1 APR 2022 – 31 MAY 2023

- Assist in collecting relevant data from alumni and administering the survey
- Assist in organizing and entering survey responses into a database or survey management system, which includes ensuring data accuracy, organizing responses for analysis, and maintaining data confidentiality.
- Help in generating reports and summaries of survey findings based on the collected data, which involve compiling and analyzing survey responses, identifying trends or patterns, and presenting the results in a clear and concise manner
- Assist in documenting the survey process, including the methodology used, any challenges or issues encountered, and recommendations for future surveys

VALK EXCLUSIVE HOTEL MIDDELBURG – MIDDELBURG, NETHERLANDS

Business or Sector Accommodation and food service activities | **Department** Front Desk |

Address Paukenweg 3, 4337WH Middelburg, Middelburg, Netherlands | **Email** Middelburg@valk.nl | **Website** <https://www.valkmiddelburg.nl/>

EDUCATION AND TRAINING

1 SEP 2024 – CURRENT Barcelona, Spain
POSTGRADUATE STUDENT IN THE EUROPEAN MASTER IN SUSTAINABLE SYSTEMS ENGINEERING (EMSSE) Universitat Politècnica de Catalunya, University of Genova, University of Technology of Compiègne

Website <https://emsse.eu/> | Level in EQF EQF level 7

29 AUG 2021 – 17 JUN 2024 Middelburg, Netherlands
BACHELOR OF SCIENCE - MAJOR IN COMPUTER SCIENCE / MINOR IN DATA SCIENCE AND ARTIFICIAL INTELLIGENCE University College Roosevelt - Utrecht University

Address Lange Noordstraat 1 , 4331 CB, Middelburg, Netherlands | Website ucr.nl | Level in EQF EQF level 6

31 AUG 2017 – 24 JUN 2021 Skopje, North Macedonia
CERTIFICATE/DIPLOMA FOR SECONDARY SCHOOL SUGS "Rade Jovceski Korcagin"

Address St. Josif Josifovski Svestarot No.35 , 1000, Skopje, North Macedonia

31 AUG 2018 – 14 FEB 2019 Skopje, North Macedonia
GRAPHIC DESIGN & 3D MODELING M3DS Autodesk Training Center

Address St. Ljubljanska No.5, 1000, Skopje, North Macedonia | Website <https://www.m3dsacademy.com/>

15 JAN 2021 – 23 FEB 2021 Skopje, North Macedonia
PROGRAMMING IN C++ Semos Education

Address Avn. Kuzman Josifovski Pitu No.19 loc.8, 1000, Skopje, North Macedonia | Website https://semosedu.com.mk/Home_page.aspx

SKILLS

Deep learning/Neural networks | Microsoft Word | Microsoft Excel | Microsoft Office | Microsoft Powerpoint | Google Docs | Google Drive | Prologue | Power Point | Research and analytical skills | Python | Java | MySQL | Prolog | Mathematica | Grel | SPSS | Cisco/PacketTracer | Whireshark | CPN Tools | Net Logo | C++ | PSPP | MongoDB | SQL | deep learning | RegEx | Business Intelligenc | DWH concepts | Data analysis & Data Management | R | Good programming skills with: Python, C++, Arduino IDE, MATLAB | Autodesk Maya 3D modelling software

PERSONAL SKILLS

Organizational and planning skills | Problem-solving | Presentation and negotiation skills | Team-work oriented | Motivated | Conflict resolution | Critical thinking | Creativity | Flexibility | Responsibility | Analytical skills | Written and Verbal skills | Decision-making | Strategic Planning | integrity | Excellent organizational planning and solving problems in short time | Good listener and communicator

PUBLICATIONS

2025
[Line Space Clustering \(LSC\): Feature-Based Clustering using K-medians and Dynamic Time Warping for Versatility](#)

Clustering high-dimensional data is a critical challenge in machine learning due to the curse of dimensionality and the presence of noise. Traditional clustering algorithms often fail to capture the intrinsic structures in such data. This paper explores a combination of clustering methods, which we called Line Space Clustering (LSC), a representation that transforms data points into lines in a newly defined feature space, enabling clustering based on the similarity of feature value patterns, essentially treating features as sequences. LSC employs a combined distance metric that uses Euclidean and Dynamic Time Warping (DTW) distances, weighted by a parameter $\{\alpha\}$, allowing flexibility in emphasizing shape or magnitude similarities. We delve deeply into the mechanics of DTW and the Savitzky-Golay filter, explaining their roles in the algorithm. Extensive experiments demonstrate the efficacy of LSC on synthetic and real-world datasets, showing that randomly experimenting with time-series optimized methods sometimes might surprisingly work on a complex dataset, particularly in noisy environments.

J Chulev, A Mladenovska - arXiv preprint arXiv:2503.15777, 2025

2024
[Improving Musical Instrument Classification with Advanced Machine Learning Techniques](#)

Musical instrument classification, a key area in Music Information Retrieval, has gained considerable interest due to its applications in education, digital music production, and consumer media. Recent advances in machine learning, specifically deep learning, have enhanced the capability to identify and classify musical instruments from audio signals. This study applies various machine learning methods, including Naive Bayes, Support Vector Machines, Random Forests, Boosting techniques like AdaBoost and XGBoost, as well as deep learning models such as Convolutional Neural Networks and Artificial Neural Networks. The effectiveness of these

methods is evaluated on the NSynth dataset, a large repository of annotated musical sounds. By comparing these approaches, the analysis aims to showcase the advantages and limitations of each method, providing guidance for developing more accurate and efficient classification systems. Additionally, hybrid model testing and discussion are included. This research aims to support further studies in instrument classification by proposing new approaches and future research directions. Write here the description...

Chulev, J. (2024, November 1). Improving Musical Instrument Classification with Advanced Machine Learning Techniques. arXiv.org. <https://doi.org/10.48550/arXiv.2411.00275>

2022
"Normalized Convolution in Restoration"

This paper shows in detail an approach to signal and image reconditioning to a certain extent where the image or signal were deemed to be restorable. We aimed to represent how normalized convolution would work to return images to their original state. This was all done virtually. We did this using a 1-Dimensional signal function, a 2-Dimension matrix function, with an image layout and finally on a high-resolution image, whilst using a Gaussian Filter. We then investigated how much of an image could be removed before it would no longer be possible to restore the original signal.

Chulev, Joanikij et al., Normalized Convolution In Restoration (December 8, 2022), SSRN.

HONOURS AND AWARDS

3 MAY 2024
Certificate of Erasmus Mundus scholarship award – European Master in Sustainable Systems Engineering - European Union

LANGUAGE SKILLS

Mother tongue(s): **MACEDONIAN**
Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C2	C2	C2
SERBO-CROAT	B2	B2	B1	B1	B1
GERMAN	B1	B1	B1	B1	B1
DUTCH	A2	A2	A2	A2	A2

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

DRIVING LICENCE

Driving Licence: B

HOBBIES AND INTERESTS

Fitness, Nutritionist, Chess, Music production.