

# Kostadin Cvejosi | Machine Learning Research Scientist

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I work as a Machine Learning (ML) researcher with a background in computer science. My PhD research was centered on Natural Language Processing (NLP), with a specific focus on integrating temporal information into Large Language Models (LLMs). As a Research Scientist at [Fraunhofer IAIS](#), I lead and contribute to diverse projects that bring cutting-edge ML solutions to various industrial domains, like predictive maintenance, process optimization, security, autonomous driving, RAG, etc. I am also part of the [LAMARR Institute for ML and AI](#). My ongoing research focuses on:

- Representation learning for reasoning in foundation language models,
- Incorporating temporal context information in large language models,
- Time series foundation models.

## Technologies

**Core Competencies:** Deep Learning, Statistics, Large Language Models (LLM), Temporal LLM, Generative AI, Probabilistic Models, Time Series Analysis, Multi-Modal LLM, Computer Vision, Research, Mentoring, Software Development

**ML&DL Frameworks:** PyTorch, Jax, Tensorflow, Numpy, Pandas, SciKit Learn

**Languages:** Python, Java, C++, JavaScript, TypeScript

## Experience

### Fraunhofer IAIS, Team leader

Sankt Augustin, Germany  
Sep. 2023 - Present

- Leading the project management, development, analysis, and deployment of diverse ML solutions in key areas such as computer vision, NLP, cybersecurity, and predictive maintenance, tailored for industrial applications
- Managing an interdisciplinary team of scientists and students, delivering cutting-edge ML solutions
- Led due diligence assessments of ML companies, analyzing their technological capabilities, market positions, and growth potential to shape acquisition strategies for clients

### Fraunhofer IAIS, ML Research Scientist

Sankt Augustin, Germany  
Aug. 2016 - Present

- Advanced research in NLP, focusing on integrating temporal dynamics into LLMs to improve language modeling for applications in text generation, recommendation systems, and social media analytics
- Distributed training and fine-tuning of LLM
- Developing methods for interpretability and transparency of ML models in the autonomous driving context. The work was done for the [KI Wissen](#) project.
- Developing state-of-the-art LLMs for password guessing, adopted by the Federal Criminal Police Office of Germany
- Collaborated with PwC Deutschland on an [AI Benchmark](#) tool project, leveraging NLP to extract insights from financial reports
- Optimizing the production process using ML techniques (e.g. Gaussian Regression, Bayesian Optimization etc.)
- Implementing state-of-the-art ML and Deep Learning using Python, TensorFlow, pandas, sklearn etc.
- Research in time series analysis, temporal point processes (Poisson, Hawkes)
- Industrial and research experience with Generative Models (Variational Autoencoders, Generative Adversarial Networks, etc.)

- Authoring and publishing research papers
- Engaging in client meetings, providing expertise and insights on ML applications
- Supervising Master, Bachelor, and Google Summer of Code students, guiding their research and development projects

**Fraunhofer IAIS**, Student Research Assistant

Sankt Augustin, Germany

Feb. 2014 - July 2016

- Research on Gaussian Processes and temporal point processes for modeling user behavior
- Authored and published research papers
- Contributing on the development of the back-end of the open [source](#) project [Open Roberta Lab](#)

**NINEKS Computers**, Software Developer

Strumica, Macedonia

Aug 2009 to Aug. 2013

- Developed and maintained desktop as well as mobile applications for accounting offices and pharmacy stores
- Worked with database management systems and wrote SQL queries on daily basis
- Took requirements and specifications from customers and planned the development and deployment process

## Education

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**PhD** **University of Bonn – Bonn, Germany**, Computer Science

Dec. 2020 to Jan. 2024

- GPA: summa cum laude

**MSc** **University of Bonn – Bonn, Germany**, Computer Science

Oct. 2013 to Nov. 2016

- GPA: 5.7/6.0

**BS** **SW University “Neofit Rilski” – Blagoevgrad, Bulgaria**, Computer Science

Sept. 2005 to June 2009

- GPA: 5.7/6.0

## Awards

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2019 Syngenta Crop Data Science Challenge [🔗](#)