

Denis Kotnik

Curriculum Vitæ (\LaTeX)

* April 13th, 1991
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Formal education

- 2014–2018 **Master of computer and information science**, *Second cycle master's study programme Computer and Information Science (specialization in artificial intelligence and machine learning)*, University of Ljubljana, Faculty of Computer and Information Science.
- 2010–2014 **Bachelor of computer and information science**, *First cycle professional study programme Computer and Information Science (specialization in information systems)*, University of Ljubljana, Faculty of Computer and Information Science.
- 2006–2010 **Computer-electrical technician**, *Vocational upper secondary education*, Šolski center Novo mesto, Secondary school of electrical engineering and technical gymnasium.

Master's thesis

- Title *Data streams and reservoir sampling for predicting production of solar power plants*
- Mentor assoc. prof. dr. Matjaž Kukar
- Description The aim of the master's thesis is to predict the production of electricity by solar power plants using incremental machine learning models, which are learned on evolving data streams.
- Link <https://repozitorij.uni-lj.si/IzpisGradiva.php?id=100897>

Bachelor's thesis

- Title *Adaptable short-term forecasting of local-weather parameters*
- Mentor assoc. prof. dr. Matjaž Kukar
- Description The aim of the diploma thesis is to predict the wind speed forecasts for the area of Slovenia using classic (*batch*) machine learning models.
- Link <https://repozitorij.uni-lj.si/IzpisGradiva.php?id=68903>

Technologies that I'm interested in ...

I am a Linux user and a software developer in object-oriented programming languages, such as *Java*, *Python*, *C#* and *PHP*. I strive for clean and readable code and *SOLID* principles (*Robert C. Martin: Clean Code, Clean Architecture, UML diagrams*).

Frameworks and libraries that I like to use are *Microsoft .NET* for Windows applications, *Laravel* with *Vue.js* for web applications and *Scikit-learn* with *Matplotlib*, *Pandas* and *Numpy* for data mining. I mainly use *MySQL* and *Microsoft SQL* relational databases, however I also have a bit of experience in single noded *Apache Cassandra* non-relational database.

In the future, I would like to gain more knowledge and experience in the field of developing microservice and event-driven architectures (*Apache Kafka*, *Akka*, *Dropwizard*, *Spring*, *Maven*, *Docker*, etc.), big data technologies (*Apache Spark*, etc.) and data mining (*Scikit-learn*, *Scikit-multiflow*, *TensorFlow*, *Bayesian statistics*, etc.).

CGS Labs d.o.o., Brnčičeva ulica 13, 1000 Ljubljana

Period 2014–2018–today (student work, on contract for an indefinite period)

As a lead software developer, I maintain and develop winter maintenance and decision support systems and lead a team of up to 4 developers at *Environment department* at *CGS Labs* company. We wrote a summary of these systems with our colleagues in the article on the following link.
https://zenodo.org/record/1485684/files/Contribution_11014_fullpaper.pdf

I am proud of being a software architect of a next generation system named *Vedra*, focusing on a microservice oriented architecture with non-relational data model. The system is currently under development.

As a part of the European project *METRoSTAT* (*E! 7050, Eurostars* program), I developed a machine learning regression model for forecasting road temperature. I also contributed to the idea of predicting the route based road forecast using incremental machine learning models on evolving data streams, which is now being realized under my guidance as part of the European project *i-RBF* (*Intelligent Route Based Forecast, Eureka* program).

My work also includes close cooperation with product users, including the *Motorway Company of the Republic of Slovenia (DARS)*, the *Slovenian Infrastructure Agency (DRSI)* and the *Slovenian Environment Agency (ARSO)*.

Other projects

Famnit, University of Primorska, Glagoljaška 8, 6000 Koper

Period April–August 2015

In collaboration with the *Faculty of Mathematics, Science and Information Technology* and *CGS Labs* company, I was part of the project in which I developed a web application in ASP.NET with emphasis on data visualization.

Comtrade d.o.o., Letališka cesta 29B, 1000 Ljubljana

Period July 2013

Together with the team, we developed a system for controlling devices in smart homes. I took on the role of a backend developer on a *Raspberry Pi* computer, set up a database and developed a web service in the *PHP* programming language for communicating with *Android* devices.

Professional certificates

- 2017 Microsoft Certified Professional, *Microsoft Exam 483: Programming in C#*
- 2010 CISCO CCNA Exploration: Network Fundamentals

Coursera online courses

- 2020 Introduction to Git and Github, *Google*
- 2014, 2020 Machine learning, *Stanford University*
- 2020 Sequences, Time Series and Prediction, *deaplearning.ai*
- 2020 Structuring Machine Learning Projects, *deaplearning.ai*
- 2019 Service oriented architecture, *University of Alberta*
- 2018 Microservices - Fundamentals, *IBM*
- 2017 Front-End Web UI Frameworks and Tools, *The Hong Kong University*
- 2015 Introduction to game development, *Michigan State University*
 - WebGL: https://www.kotnik.si/broadside_pirates_webgl/
 - Unity3D: <https://www.youtube.com/watch?v=UZjLVe7J1jM&t=84s>
- 2013 Learning how to learn, *McMaster University*
- 2014 Introduction to music production, *Berklee College of Music*
- 2013 An introduction to interactive programming in Python (part 1), *Rice University*

Other

- 2010–today Linux Ubuntu user
2020 Mountaineering school *Železničar*, www.aozeleznicar.org
2016–2017 Network administrator assistant, *Rožna dolina*
2012–2014 Member of an international organization *EESTEC*, www.eestec.net
2013 Boatmaster's exam up to 24 m in length
Childhood Elementary music school *Trebnje*

Languages

- Slovene Native language
English Good understanding, good speaking, good writing, level *B2.2*
Dutch 800 words and basics of grammar, level *A1.2*

Interests

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| – Philosophy | – Psychoanalysis |
| – Mountaineering, climbing | – Martial arts |
| – Guitar playing | – (Choir) singing |
| – Volleyball | – Skiing |
| – Badminton | – Chess |
| – Poetry writing | |

Personal characteristics

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|--------------------------------|------------------------------|
| – Open-minded | – Introverted |
| – Sometimes lazy | – Caring |
| – Responsible | – Organized |
| – I like order and cleanliness | – I like personal challenges |