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Karel Šmejkal

Curriculum Vitae

Master's student of Computer Science at Technische Universität Berlin, Data scientist specialising in machine learning. I have acquired a wealth of theoretical and practical expertise from working in a real-estate startup and through my Master's candidature in computer science at Technische Universität Berlin. I am especially interested in autonomous driving, deep learning implementation and research applications of state of the art computer vision systems. I am passionate about building intelligent, autonomous systems and new technologies to improve outcomes for future generations.

Education

2017– present	**Master's Degree**, Computer Science, Cognitive Systems
	Faculty IV: Electrical Engineering and Computer Science, **Technische Universität Berlin (Berlin Institute of Technology)**, Germany
2012–2016	**Bachelor's Degree**, Information System and Management
	Faculty of Information Technology, **Czech Technical University in Prague**, Czech Republic
	○ Awardee of grant for outstanding performance in summer semester 2015 and winter semester 2015/2016
8/2014–8/2015	**Study abroad**, Institute of Informatics, Computer Science, Universidade Federal do Rio Grande do Sul, Brazil

Experience

10/2018-04/2020	Beekin **Working Student - Data Scientist**, *Berlin, Germany*
	○ Build models (Random Forest, Ensemble) to classify risk of late payments of borrowers
	○ Time Series Analysis to predict (Linear Regression) and analyse monthly rent in cities in the USA
	○ Analysis and optimal pricing of meeting rooms
	○ Use of AWS lambda and machine learning techniques to automate and clean data as well as analysis of large datasets
	○ NLP crime types categorisation **Technologies used: Python, PySpark, AWS, ML frameworks, SQL**
08/2017-09/2018	Spotcap Global Services GmbH **Working Student - System Admin**, *Berlin, Germany*
	○ Maintenance of local network infrastructure
	○ Setting up relational and non-relational databases
	○ Assisting in deploying services on Linux-based servers (AWS, local servers)
	○ Automating simple scripts (python, shell)
	○ Diagnosing and resolving technical hardware and software issues **Technologies used: Shell, Python, AWS, SQL, NoSQL**

Volunteer Experience

02/2021- 05/2021	MODEL-FREE OBJECT DETECTION AND TRACKING ○ The main goal of this project is to implement solution for model-free detection and tracking of moving objects using 2D laser scanner on the F1Tenth 1/10 scale autonomous race car system. Specifically, object tracking is achieved using 2D LiDAR of the F1Tenth vehicle. This project builds on the work of Dominic Zeng Wang and his collaborators, who proposed a model-free LiDAR-based object tracking system that separates out the static background to help track dynamic objects in a principled and straightforward way. Developed in **Python**. Technical paper: LINK
10/2019- 02/2020	SMALL-SCALE AUTONOMOUS RACING CAR ○ Development of an small-scale autonomous racing car in a group of 4. The goal was to develop autonomous racing car which could race on previously unknown track. Developed in **Python and C++ using ROS middleware**. Short demo: LINK. Technical paper: LINK
06/2018	TECHCRUNCH HACKATON 24 Hours Hackaton held in Paris ○ Development of an app to automate process of car rental for a company GEFCO in the team of 5 people. The goal was to use cameras during the return of a car to automate cleaning and detection of small scratches on the car's surface. The app was developed for android and the model in **Python (TensorFlow)**.
06/2017	OCEAN GAME JAM BERLIN Two-day event held in Berlin with the purpose of creating a game about the scientific issues. ○ Development of the the game FISH in a team of five members using **Java** and **libGdx** framework. Creating a fun, playable game that generated warnings for rising sea levels and overfishing with a team of five members.
03-06/2015	MEDIA ART LAB MERCOSUL An international artistic project for the Goethe Institute in Porto Alegre (Brazil) led by German artist PEGGY SYSLOPP. Developed in **shell, Python and C**. ○ Programming of internetive media-installation with 6 CRT monitors and one Raspberry. ○ Dynamic testing of interactive media-installation with two Raspberry Pi and one Pi2Go. – The robot Pi2Go with a camera follows a fictive borderline in the form of an heart and streams the video to a Raspberry.

Computer Skills

Programming Languages	- Python, C++, Java, SQL, Shell Scripting	**Machine Learning Frameworks**	- Scikit-learn, PyTorch, fast.ai, TensorFlow, Keras
Libraries/ Frameworks	- OpenCV, Pandas, NumPy, Apache Spark, ROS	**Technologies**	- AWS, GCP, Docker, Git

Languages

English	Fluent
German	Intermediate
Czech	Native
Brazilian Portuguese	Intermediate

External Interests

Travelling	Enjoy solo travelling on a budget which enables me to get out of my comfort zone and explore new cultures.
Photography, Videography	Expressing creativity through video editing and short video composition.
Podcasts, Books	Learning new ideas and expanding my knowledge. My favorite podcasts: Lex Fridman Podcast, Joe Rogan Experience. My favorite Books: 12 rules for life by Jordan Peterson, Brief answers to the big questions by Stephen Hawking, Life 3.0 by Max Tegmark
Drone Flying	How I like to spend my free time on the weekends.

Enright

Berlin, June 2, 2021