

FINAL REPORT

Project title: International Summer School 2018 on Deep Learning and Visual Data Analysis

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Project duration: 1. 8. 2018 – 30. 11. 2018

Partners: Faculty of Electrical Engineering and Computer Science of VSB - Technical University of Ostrava (Czech Republic), Faculty of Computer Science of the University of Vienna (Austria)

Funding scheme: Aktion programme Czech Republic-Austria

The project International Summer School 2018 on Deep Learning and Visual Data Analysis (further referred to as „Summer School“) was prepared, submitted, and implemented jointly by the Faculty of Computer Science of the University of Vienna (“FCS UV”) and the Faculty of Electrical Engineering and Computer Science of the VSB - Technical University of Ostrava (“FEECS VSB-TUO”).

The project followed the cooperation of the partner institutions. In November 2016, a workshop on Machine Learning, Data Mining, Data Processing, and Image Processing took place at the VSB - Technical University of Ostrava. In February 2017, another workshop on Visual Data Mining and Applications took place at the University of Vienna. In September 2017, the first Summer School was held in Ostrava (project number 79p3). For a first event of its kind, the school has enjoyed a significant success. It featured lectures delivered by 9 experts from the Czech Republic, Austria, and Germany. The school had indeed an international impact with attendees from eight different universities and six different countries.

The objective of this Summer School was to continue in this successful activity, learn from the previous Summer School to better the experience for all involved parties. The main focus remained deep learning and visual data analysis with the added overall theme of data science. Thus the name: “Data Science Summer School @ Uni Vienna”.

The applicants handed in a CV and letter of motivation and were selected after a reviewing process by the regional team (Austrian applicants selected by the University of Vienna, Czech applicants by the VSB-TUO). 30 participants (15 Austrian participants and 15 Czech participants) were selected as scholarship participants and paid a small fee (90 Euros). Students from other universities and other countries also attended after a reviewing process done by Prof. Möller and Prof. Snasel. Overall, there were students from six different countries (Austria, Czech Republic, Germany, Slovakia, Italy, and USA), most of them were PhDs or master students, but also promising bachelor students and graduates working in the industry.

The schedule of the lectures was changed from thematic blocs to a more build-up approach. On the first day, foundational lectures were held regarding Visualization. Prof. Miriah Meyer

– our guest lecturer the University of Utah – held a lecture. Her lecture was the highest rated lecture of our Summer School.

The second day focused on principles of machine learning and deep learning as well as an introduction to neural networks by mathematician Prof. Philipp Grohs. To emphasize independent work and good tutoring and mentoring, we concluded the first and second day with tutorials. Several tutors as well as the lecturers were present to guide the participants to hands on approaches of what they learned that day. Cooperative work was also encouraged to help each other out to stimulate networking.

The third day was reserved for a coding contest. Students were given a dataset of parking spaces and had to use machine learning to decide whether they were occupied or not. The students had free time to code and could ask the lecturers for guidance. Some students worked alone, and some in groups. In the closing session the winners were announced. There were Certificates of Appreciation and prizes for best team work, best result analysis, best image processing, best native machine learning, fastest solution etc.

Thursday was reserved for special topics and focus fields as well as our social event, a hike and a stop for dinner.

On the last day of our Summer School, Prof. Möller tied the concepts together in his lecture. The closing session was reserved for closing remarks, feedback, Q&A and handing over certificates.

The lecturers stemmed from various fields. The Czech lecturers were: Radovan Fusek, Pavel Krömer, Jan Platos, and Vaclav Snasel. Most of them were staying in Vienna for the whole duration of the Summer School to further work on the cooperation of both universities. Vaclav Snasel (rector of the TU Ostrava) met with the vice rector of the University Vienna and developed an ERASMUS agreement that will soon start. Michaela Vrazelova accompanied the Czech students, helped with the organization and cooperated with the administrative staff of the Summer School. The Austrian lecturers were: Philipp Grohs, Johannes Hofmanninger (Medical University of Vienna), Christoph Kralj, Torsten Möller, Alexander Schindler and Thomas Torsney-Weir, as well as Christoph Langer and Stephane Wegscheidl, who helped with the tutorials. All lecturers can be found on our homepage: <https://datascience.univie.ac.at/summer-school-2018/lecturers/>

The participants and Czech lecturers were accommodated at Porzellaneum, a student dormitory, which operates as a hotel in the summer months. The students stayed in double-rooms except one female Czech student (there were an uneven number of female Czech attendants), who stayed in a single room. The lecturers stayed in single rooms. Breakfast was served at Porzellaneum. Lunch was served in the canteen of Oskar-Morgenstern-Platz. Dinners were held at several restaurants in the city. We used name tags to mix up Czech and Austrian students, and mixed them up every day. This was a fun way to get to encourage conversations among different participants every evening.

We had various social events throughout the week. Our sponsor Drahtwarenhandlung hosted the first dinner party. We had a guided tour through the University of Vienna which consisted

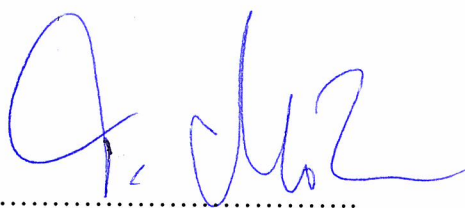
of two groups, an English one and a German one. The tour in German focused on art history and was also sponsored by the Drahtwarenhandlung. There was an excursion to Kahlenberg, which consisted of a hike through the Viennese vineyards and traditional heuriger food in the vineyards.

We could secure two sponsors. Drahtwarenhandlung is a company that specializes in system analysis, modelling and simulation. VrVis is a research center for virtual reality and visualization. With their help we could cover the costs for the coffee breaks and a welcome bag made out of environmentally friendly material. Wiener Wasser provided as with reuseable water bottles also made out of environmentally friendly material.

Last but not least, the partners thank the Aktion Programme Czech Republic-Austria for financial support of the Summer School. It greatly helped our collaboration between the two universities. We are not only talking about a third instalment of the Summer School, but also about academic and administrative exchanges in 2019. Thomas Torsney-Weir will visit Ostrava in April and Anne Marie Faisst, the administrative coordinator of our Summer School, will visit TU Ostrava's international week and collaborate with their International Bureau and prepare for the next Summer School alongside Michaela Vrazelova.

The list of participants, and the results of the evaluation survey are attached to this report as separate documents. A selection of pictures can be found on our website, as well as the programme: <https://datascience.univie.ac.at/summer-school-2018/>

Vienna, 06.02.2019



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Univ.-Prof. Torsten Möller, PhD

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