Advanced Seminar (Hauptseminar)

Visualization
# and Machine Learning

Institute for Visualization and Interactive Systems

Today's society produces digital information in unprecedented amounts and speed. Making sense of and exploiting this information is difficult but also poses great opportunities. Machine Learning (ML) approaches help to tackle this Big Data challenge. ML methods have been successfully applied to a broad spectrum of problems and tasks in various domains. Despite the impressive progresses, a large number of problems cannot be addressed easily with ML methods alone. The reasons for this are manifold and include the subsequent ones.

- Not all analytic tasks are sufficiently well-defined to create a suitable ML approach once, but instead require the ad-hoc creation/application of ML techniques
- Ground truth information might be completely missing, which makes the creation of sufficient test sets and training data for ML-techniques as well as their subsequent evaluation difficult
- The creation of training data can be very costly
- Deep Neural Networks, for example, can be difficult to deploy because the training of such networks is computationally expensive and methods to reduce trial and error approaches are required
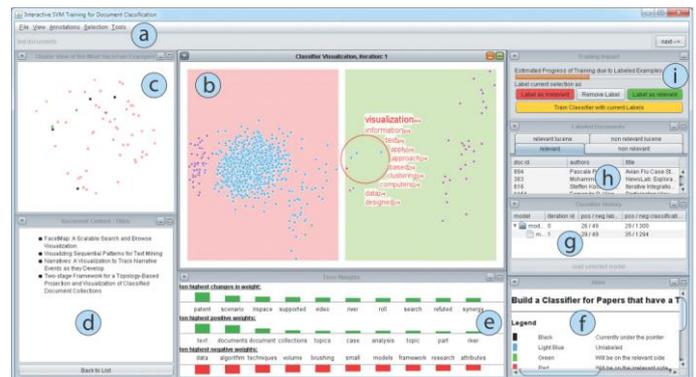
[Heimerl, Florian, et al. "Visual classifier training for text document retrieval", 2012]

In many of these cases the inclusion of interactive visualization can help to reduce effort or solve problems. This is also reflected through the recent rise of the relatively young research discipline of Visual Analytics (VA) that explicitly aims at combining Visualization with automatic techniques such as ML. In this advanced Seminar we accordingly present and discuss approaches that combine or integrate interactive visualization and ML in order to deal with ad-hoc scenarios, create and improve training sets, evaluate ML results, interactively develop ML methods, etc.
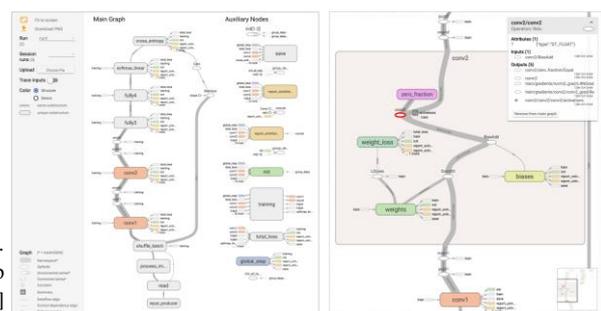
Targeted audience

Master Computer Science
Master Informatik
Master Softwaretechnik

Language

English

[Wongsuphasawat, Kanit, et al. "Visualizing Dataflow Graphs of Deep Learning Models in TensorFlow", 2018]

Dates

The seminar will take place in the summer semester 2021 at the VISUS building in room 00.012 on Tuesdays at 2 pm starting on April 20th. There will be no preparation meeting, topics will be assigned during the first seminar class.

Contact

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