The paper “Reinforcement Learning Based Decision Tree Induction over Data Streams with Concept Drifts” co-authored by MSc student Christopher Blake and the L3S member Prof. Dr. Eirini Ntoutsi won the best student paper award at the IEEE International Conference on Big Knowledge (ICBK), that took place in Singapore from November 17-18 (http://icbk2018.bigke.org/).

The work has been inspired by the DFG project OSCAR - Opinion Stream Classification with Ensembles and Active leaRners, for which Prof. Ntoutsi is the co-principal investigator, and partially funded by the ALEXANDRIA project (ERC Advanced Research Grant, Prof. Wolfgang Nejdl).

The paper proposes a modification of the formulation of the decision tree induction problem for non-stationary data streams using reinforcement learning (RL). To adapt to underlying data changes, we introduce a local reset strategy at the tree nodes. Finally, the learned policy via RL is summarized into a human-readable decision tree. In our future work, we will extend the approach for continuous attributes as well as for fairness-aware learning scenarios.

Reference:
C. Blake, E. Ntoutsi, “Reinforcement Learning Based Decision Tree Induction over Data Streams with Concept Drifts”, IEEE ICBK, 2018.

Best Student Paper Award at IEEE ICBK