FACULTY
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TECHNOLOGY
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ASSIGNMENT OF MASTER'S THESIS

Title:	Neural Networks Based Domain Adaptation in Spectroscopic Sky Surveys
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Supervisor:	RNDr. Petr Škoda, CSc.
Study Programme:	Informatics
Study Branch:	Knowledge Engineering
Department:	Department of Applied Mathematics
Validity:	Until the end of winter semester 2020/21

Instructions

The goal of this thesis is the analysis of the impact of domain adaptation in astronomical archives with a focus on neural networks that would allow using labelled data from one ground-based telescope or space mission archive to discover knowledge in another archive. Current astronomy has been the primary customer of scalable Big data handling and analysis requirements due to its petabyte-scale archives, where an advanced machine learning is an indispensable part of workflows leading to new discoveries.

1. Survey the current state of domain adaptation using neural network models in machine learning and with a focus on astronomical applications.
2. Select suitable dataset of astronomical spectra for experiments.
3. Investigate the structure of data space in selected datasets.
4. Apply domain adaptation to the selected data.
5. Prepare visualisation of results.
6. Discuss the precision performance and scalability of various solutions and suggest future improvements.

References

Will be provided by the supervisor.

Ing. Karel Klouda, Ph.D.
Head of Department

doc. RNDr. Ing. Marcel Jiřina, Ph.D.
Dean

Prague August 15, 2019