

Czech Technical University in Prague  
Faculty of Electrical Engineering  
Department of Computer Science

## DIPLOMA THESIS AGREEMENT

Student: Ondřej Hubáček

Study programme: Open Informatics  
Specialisation: Artificial Intelligence

Title of Diploma Thesis: Exploiting betting market inefficiencies with machine learning

### Guidelines:

Based on the availability of data and advances in machine learning, we see a rising scientific interest in the area of predictive sport analytics. The subject of this thesis is to perform a rigorous investigation as well as a practical implementation in this direction.

- 1) Research the state of the art in data-driven prediction-focused sport analytics
- 2) Conduct a structured survey and sharpen your focus on most appropriate subfield (e.g., sport) from the perspective of applying machine learning techniques
- 3) Collect and integrate historical data from available relevant sources
- 4) Design diverse prediction scenarios and respective machine learning pipelines
- 5) Propose appropriate testing strategy for your models and assess theoretical profits of the whole architecture against various prediction targets given by the market
- 6) Compare your approach with existing state of the art methods across different dimensions

### Bibliography/Sources:

- [1] HAGHIGHAT, Maral; RASTEGARI, Hamid; NOURAFZA, Nasim. A review of data mining techniques for result prediction in sports. *Advances in Computer Science: an International Journal*, 2013, 2.5: 7-12.
- [2] FRANCK, Egon; VERBEEK, Erwin; NÜESCH, Stephan. Prediction accuracy of different market structures?bookmakers versus a betting exchange. *International Journal of Forecasting*, 2010, 26.3: 448-459.
- [3] CONSTANTINOU, Anthony Costa; FENTON, Norman Elliott; NEIL, Martin. Profiting from an inefficient Association Football gambling market: Prediction, Risk and Uncertainty using Bayesian networks. *Knowledge-Based Systems*, 2013, 50: 60-86.
- [4] CAO, Chenjie. Sports data mining technology used in basketball outcome prediction. 2012.

Diploma Thesis Supervisor: Ing. Gustav Šourek

Valid until the end of the winter semester of academic year 2017/2018

  
prof. Dr. Michal Pěchouček, MSc.

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Prague, September 9, 2016