

## **Abstract**

The emergence of the effects of global warming, as well as the ongoing depletion of fossil fuels and fertile soil pose a serious threat for the future of the agricultural industry. Alternatively, the continuous population growth mainly in the less developed regions highlights the future need of approximately 70-110 percent increase in the overall output of contemporary food production. While the current conventional agriculture deploys a multitude of technologies including the precision agriculture framework, the future needs of the population exceed the projected capabilities of the industry. Machine learning as the current fastest growing technology represents the potential remedy for the emerging issues, yet the extent of successful implementation remains uncertain.

The thesis aims to uncover the potential future implications of implementation of machine learning based technology in agriculture through the use of the new scenario building methodology. The analysis builds on a varying set of empirical data, current state of art projects in machine learning and multiple future trend projections. Albeit the scenario building technique allows for a potentially endless number of constructed scenarios, the thesis concentrates on three main plot lines. First scenario tackles the more probable optimistic perspective, while the second contains a similarly feasible, more reserved, and less optimistic future. Finally, the third scenario centres around a less probable future scenario filled with wild card events and unprecedented developments.

Both the issues including climate change and depletion of resources, as well as the use of machine learning in agriculture exist within the contemporary academic literature. Thus, the first three chapters contain the conceptual and methodological framework, as well as the review of the relevant literature. Even though the core of the thesis focuses on the future developments, the fourth chapter uncovers the empirical data used for the projection of observed trends and indication of potential emergent phenomena. Finally, the scenarios themselves are constructed in the final three chapters, while the chapter seven concludes the process through the uncovering of the “history of the future.