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ISBN ISSN
Copies No. .....
Date .....-.....-.....

Master Degree Studies **Data Science and Statistics** study programme Master Graduation Thesis

Title	**Game agents created by the incentive model**
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Thesis language: Lithuanian

Annotation

The final master thesis implemented a machine learning model, TD3, which helps the spider agent to move its physical limbs towards a goal. The analytical part of the thesis discusses the basic functions of reinforcement learning and the primary reinforcement learning models, neural networks and how they are used to approximate the following reinforcement learning methods: deep-Q, actor-critic, DPG, DDPG and TD3. In the practical part, I present an implementation of the spider crawling algorithm, which was implemented in unity and python environments using the TD3 model. The trained spider physically moved its eight limbs and crawled towards a marked coordinate. The successful results obtained in the practical part are discussed in the conclusions.

The thesis consists of 7 parts: introduction, theoretical part, practical part, conclusions, list of references, appendices, glossary. The thesis consists of 53 pages of text without appendices, 22 illustrations and 10 bibliographical references, 6 terms.

Keywords: Reinforcement learning, TD3, deep-Q, DDPG, neural networks, physical limb movement.