Faculty of Informatics, Vytautas Magnus University
Bachelor studies, study programme “Informatics Systems”
Nikita Petruk

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(name, surname)

BACHELOR THESIS (task description)

TITLE: Implementation of Intrusion Detection System based on Artificial Intelligence.

GOAL: To design, implement, and evaluate an effective Intrusion Detection System utilizing Artificial Intelligence techniques to enhance the security of computer networks.

TASKS:
1. Review existing literature to identify trends and methodologies in AI-based intrusion detection systems.
2. Gather and preprocess network traffic data to prepare it for AI model training.
3. To test and train AI models to accurately detect intrusion patterns in network traffic.
4. Develop and integrate the AI-based IDS software into the target network environment.
5. Evaluate the effectiveness and performance of the implemented IDS through comprehensive analysis and metrics.

EXPECTED RESULTS:
- for midterm presentation:
  To have a comprehensive understanding of newest trends and methodologies in AI-based IDS, to gather/create newest network traffic data and prepare it for further AI model training. Develop and train the required AI.

- for final presentation:
  To integrate the gathered AI model into IDS software, evaluate and test the performance in real network.

SCHEDULE (expand/reduce table upon need)

Week (or up to the date)	Activities	Results
10.04.2024	To do a literature review and preparation of datasets.	Comprehensive understanding of newest trends and methodologies in AI-based IDS
19.04.2024	To develop and train AI model based on gathered datasets.	To get the most precise AI model.
01.06.2024	Implementation of the designed AI into IDS software. Evaluation of the effectiveness and performance of IDS.	Tested and ready for production IDS software.

Student — Nikita Petruk
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(name, surname, signature)

Supervisor
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(title, name, surname, signature)

Study Programme Coordinator
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(title, name, surname, signature)