EÖTVÖS LORÁND UNIVERSITY

FACULTY OF INFORMATICS

Thesis Registration Form

Student's Data:

Student's Name: Borsy Máté

Student's Neptun code: H8TVO7

Course Data:

Student's Major: programtervező informatikus, mesterképzés (MA/MSc)

I have an internal supervisor

Internal Supervisor's Name: *Lőrincz András*

Supervisor's Home Institution: ***Department of Artificial Intelligence***

Address of Supervisor's Home Institution: ***1117, Budapest, Pázmány Péter sétány 1/C.***

Supervisor's Position and Degree: *Senior Researcher, PhD*

Thesis Title: Enhancing warehouse safety through real time updates of the digital twin model in case of malfunctioning robots

Topic of the Thesis:

(Upon consulting with your supervisor, give a 150-300-word-long synopsis os your planned thesis.)

It is a critical challenge to ensure human safety in warehouse environments where autonomous robots operate. In the event of a robot malfunction, communication (with the robot) can be lost, which might result in a high-speed encounter with a human. The proposed solution focuses on the integration Neural Radiance Fields (NeRF) technologies to develop a robust preventative system. Creating a digital twin of the warehouse environment and leveraging real-time updates, this research seeks to prevent potential accidents and enhance overall safety protocols proactively.

The topic provides various challenges:

Analyzing the potential of creating accurate digital twins of environments using Neural Radiance Fields (NeRF).

Enabling real-time updates on digital twins for humans and robots poses a complex challenge. Achieving communication and adapting to a dynamic environment with prediction.

The thesis goal is to develop and implement an effective solution for digital twins using real-time updates between humans and robots in the context of human-robot interaction. This solution aims to overcome challenges related to communication, dynamic environmental changes, aligning interpretation, and contextual awareness.

Budapest, 2023. 12. 12.