

I. IDENTIFICATION DATA

Thesis title:	Design and Implementation of a GNSS Simulator Supporting Advanced Simulations of Mobile Robot Motion in Outdoor Environments
Author's name:	Václav Truhlařík
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Dept. of cybernetics
Thesis reviewer:	Ing. Jiří Svatoň, Ph.D.
Reviewer's department:	Dept. of radioelectronics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>How demanding was the assigned project?</i>	
The assignment is more complex than is evident. Knowledge of geodesy, geoinformatics, signal propagation, GNSS receiver processing, ranges and pseudoranges measurement, and its creation is required.	

Fulfilment of assignment	fulfilled
<i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	
Fulfilled.	

Methodology	correct
<i>Comment on the correctness of the approach and/or the solution methods.</i>	

Technical level	B - very good.
<i>Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?</i>	

Formal and language level, scope of thesis	A - excellent.
<i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	
Minor typing errors ("Necessity ... com from", "simulators Although", "dbHz"). An introduction is a bit unnecessarily long and has rare errors (enumeration of receiver types, types of processing) and misunderstandings, but no fundamental errors impacting the work (goals achieved) are present.	

Selection of sources, citation correctness	A - excellent.
<i>Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?</i>	
Correct.	

Additional commentary and evaluation (optional)
<i>Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.</i>

The objective is a visibility-based GNSS receiver simulator using 3D obstacle modeling in Gazebo, ROS. Output is simulated RINEX observation file. Ray tracing and simplified signal physic (signal attenuation, phase) is used; receiver, antenna, and channel (atmosphere) specific effects (multipath, noise, receiver clock offset, drift) are not simulated. However, it is entirely sufficient for mentioned utilization. The simulation was successfully tested (not perfect, but an adequate match) and verified against real data. Utilization of a third-party GNSS Toolkit (GNSSTK) as a main tool is relevant.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.

The grade that I award for the thesis is **A - excellent**.

Date: **5.6.2024**

Signature: