THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	Trust Model for Global Peer-To-Peer Intrusion Prevention System
Author's name:	Bc. Lukas Forst
Type of thesis :	Master
Faculty/Institute:	Faculty of Electrical Engineering
Department:	Department of Computer Science
Thesis reviewer:	Sebastian Garcia
Reviewer's department:	Department of Computer Science

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	A

How demanding was the assigned project?

This thesis was very hard and demanding. The student worked in a they challenging problem of "how to trust others that you don't know to give you correct data?" This is a problem that has been worked for many different environments and still today is under heavy development. The assignment is specially hard because is not only about doing a trust model, but a trust model for global P2P networks with adversarial attacks.

Fulfilment of assignment	A

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.

The thesis fulfils the assigned task completely. The primary goal and secondary goals were achieved. Even though the assignment was large and complex, it was done to the specification.

Methodology	A

Comment on the correctness of the approach and/or the solution methods.

The methodology used by the thesis is correct and sound. It works on the problem by studying previous work, and even taking part of a previous work (SORT) as the base for the design. Then the trust model is designed by covering adversarial cases and exploring the implications of the design. Then the trust model (Fides) was completely implemented in python (>3000 lines) and make it work in a real P2P network.

Technical level	A

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?

The thesis is technically sound and correct. The student created a trust model that is completely tailored for security purposes of distributed P2P networks based on and improving peer-reviewed published trust models. Therefore the basis of the work is sound. The explanations are very well done, considering that the work is very extensive and the simulation/verification is very complex. That means that the explanations of the verifications was hard and required new metrics created by the student.

Formal and language level, scope of thesis   **A**

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?

The thesis uses properly formalisms and notations given that it is based on the previously published SORT model. The student extended and improved that model for security distributed systems based on threat intelligence. The thesis is organised correctly and extensive. The presentation, graphs, and tables are very good, as it is the English.

Selection of sources, citation correctness   **A**

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?

The work on trust models has a long history that was correctly covered by the student. The most important parts were cited and there are references to proper work. The original work of the student is clearly distinguished from previous work and all citations are good. In particular the work done in understanding the SORT model which has more than 40 equations that come together was well done.

Additional commentary and evaluation (optional)

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.

This thesis is of outstanding quality, by designing a novel trust model for adversarial global peer to peer networks that can greatly improve and impact our daily activities in the security community. The utility of the solution is very large, qualifying not only for papers, but even for a start-up idea. The student showed advanced skills in formalisation, developing and research.

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**

This thesis was done in a very challenging topic: how to trust others to help us be better? In the particular in the area of network security this is a challenging problem which was only solved in our community by manually verifying the people related to a public project and with trust in some organisations. This thesis proposed a trust

mode for fully distributed global peer to peer systems of security sharing data. The trust model was designed with adversaries in mind and with the concept of pre-trusted organisations that the users can configure. This work is a step forward in the problem of sharing data with unknown peers in order to be better protected. It shows that our community can be more resilient to manipulation attacks, which is a much needed solution.

I strongly recommend this thesis for an award.

Date: **2022/06/12**   Signature: Sebastian Garcia