

I. IDENTIFICATION DATA

Thesis name:	Distributed Deep Neural Networks for Network Slice Management
Author's name:	Ondrej Smid
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Dept of Telecommunication Engineering
Thesis reviewer:	Zdenek Becvar
Reviewer's department:	Dept of Telecommunication Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>Evaluation of thesis difficulty of assignment.</i>	
The topic of distributed DNNs over network is fairly recent and has a plethora of challenges. The target of this thesis is to design a DDNN architecture that balances slice management objectives together with the percentage of locally resolved samples in a structured way. To my opinion, the task is highly non-trivial and demands a fair amount of research maturity.	

Satisfaction of assignment	fulfilled
<i>Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.</i>	
The thesis has a variety of interesting results: the presented approach is technically sound and the proposed policies outperform reasonable benchmarks. The assignment goals were thus met successfully in my opinion.	

Method of conception	correct
<i>Assess that student has chosen correct approach or solution methods.</i>	
Ondrej seems to have grasped quite well a challenging problem; the reasoning and thought process behind the architecture and the related evaluation make sense.	

Technical level	A - excellent.
<i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	
The topic of the thesis is quite specialized; it connects network resource management with the distributed DNN framework. I believe the thesis: (a) fits quite well inside the existing literature, and (b) offers substantial new knowledge.	

Formal and language level, scope of thesis	B - very good.
<i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>	
The language is good, and the writing fairly clear. However, the math notation is much heavier than needed; however, using minimal notation is not easy for students at this level.	

Selection of sources, citation correctness	A - excellent.
<i>Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.</i>	
All relevant rules were respected. To my best knowledge, the thesis has cited sufficient literature covering the slice management problem and some ML related work.	

Additional commentary and evaluation
<i>Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.</i>

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III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation. Please present apt questions which student should answer during defense.

In this thesis, there are some interesting ideas, which have also been investigated in good depth; I think part of those results is worthy of publication.

Two questions:

- *What are the main advantages of using a classification model instead of confidence-based decision mechanism (as in DDNN ICDCS 2017)?*
- *Say I need X% of the samples to be resolved locally – could you guarantee this X somehow with the architecture and optimization procedure that you presented?*

I evaluate handed thesis with classification grade **B - very good**.

Date: **26.1.2022**

Signature: Theodoros Giannakas