

I. IDENTIFICATION DATA

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| Thesis name: | Automated ADAS test development |
| Author's name: | Danielle FOTSO |
| Type of thesis : | master |
| Faculty/Institute: | Faculty of Mechanical Engineering (FME) |
| Department: | Department of Automobiles, IC Engines and Railway Vehicles |
| Thesis supervisor: | Ing, Václav Jirovský, Ph.D. / Freddy Tioguim |
| Supervisor's department: | Department of Automobiles, IC Engines and Railway Vehicles / PSA France |

II. EVALUATION OF INDIVIDUAL CRITERIA

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| Assignment | challenging |
| <i>Evaluation of thesis difficulty of assignment.</i> | |
| The assignment is aiming in the area of improvement of the validation chain for ADAS/AD systems, particularly on automation of generation of testing scenarios using Markov Chains. | |

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| 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 assignment was fulfilled. | |

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| Activity and independence when creating final thesis | B - very good. |
| <i>Assess that student had positive approach, time limits were met, conception was regularly consulted and was well prepared for consultations. Assess student's ability to work independently.</i> | |
| See the Assessment of Internship attached: Mr. Tioguim stated that the student was able to solve the various problems that were submitted to her by proposing satisfactory and applicable solutions. The global appreciation is Very good. | |

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| Technical level | D - satisfactory. |
| <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> | |
| <p>The assignment provided by PSA requires application of Markov Chains Monte Carlo method and Gibbs sampling methodology for automated definition of test scenarios for ADAS/AD testing. It is rather unclear, why such method was mandatory. As is understood from the thesis, student has created a table of scenario parameters (presented in Appendix 2 – Parameter classification). These were manually enhanced with some probability of existence and clustered into possible vs. not possible groups (i.e. day vs. night). Then, 5000 test scenarios were generated. It is rather unclear, how the Markov Chain theory is applied. The whole solution as presented satisfies more the approach of common conditional probability, as the scenarios generated or the scene parameters in each scenario are not related one to another in time. Similarly, Markov Chain Monte Carlo method was probably intended to set the probabilities of each parameter in the defined sets automatically. However, these probabilities were later set manually.</p> <p>The final product of the thesis is an automatic generator for test scenarios for ADAS/AD systems testing. It is presented in the thesis, but no discussion of the output quality is provided. Even though, the final product was not definitely realized with correct application of MCMC, the contribution of the thesis to automated test creation is not negligible.</p> | |

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| Formal and language level, scope of thesis | D - satisfactory. |
| <i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i> | |
| The thesis is at first sight well organized, hence the chapter numbering is very confusing – the text does not use the main chapters' numbering, thus the subchapter of i.e. chapter 3 is numbered as I.1.2.4, where the first I is formally first main subchapter of chapter 3. Furthermore, the text would highly benefit from passing language proofreading, as some of the sentences are even not understandable. | |

Selection of sources, citation correctness**C - good.**

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.

Sources are correctly cited throughout the thesis. It is very hard for the reader to distinguish between the parts done by the students and parts provided by a third party. Student is often referring to the help of others, but this is not limited to the SotA chapters.

Additional commentary and evaluation

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.

The thesis assignment provided by PSA was focused on application of Markov Chains Monte Carlo method in the area, where it can find its application. As has been understood by distant supervisor, the application of MCMC in the actual task were not either correctly explained by the industry tutor, or the MCMC method was not understood by the tutor at all. Defining a statistical distribution of target function for the scenarios setup to deliver automated probability of scenario's parameters should have been the possible application. Instead, these probabilities were entered manually. Furthermore, as understood from the thesis, MCMC was possibly somehow applied to generate final sets of parameters of each scenario (full algorithm is not presented). This application is at least confusing, as each scenario is independent of any other scenario. Therefore, I presume the terms like MCMC or Gibbs sampling were used for different algorithms than were intended to.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation.

As a distant supervisor with limited influence on the student's work, I have to admit, that the student presented a non-negligible amount of work with practically applied results. Even though the final goal of the thesis was most probably reached by different methods, than were expected, I recommend the thesis for the defense with classification grade **C - good**.

Date: **29.8.2019**

Signature: