

I. IDENTIFICATION DATA

Thesis name:	Object Scene Flow in Video Sequences
Author's name:	Bc. Michal Neoral
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Cybernetics
Thesis reviewer:	Dr. Patrick Sauer
Reviewer's department:	Toyota Motor Europe

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>Evaluation of thesis difficulty of assignment.</i>	
The thesis aims to address shortcomings of current state-of-the-art scene flow estimation algorithms, both regarding runtime performance and estimation accuracy. Considering the large body of existing work on motion estimation, as well as the technical complexity of the algorithms involved, improving on the state-of-the-art is challenging.	
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>	
All points of the assignment are fully addressed.	
Method of conception	correct
<i>Assess that student has chosen correct approach or solution methods.</i>	
The student's investigation is based on a thorough quantitative analysis of the runtime performance and accuracy of the state-of-the-art OSF algorithm. The quantitative analysis was used to identify weaknesses in the state-of-the-art and to develop hypotheses for how runtime performance and accuracy could be improved on. A number of improvements were implemented and their impact analysed.	
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 completion of the work in this thesis requires a good grasp of key concepts and methods from the field of Computer Vision related to image geometry, Optical Flow as well as modelling and optimisation. The literature review investigates the most significant methods for scene flow estimation and an in depth analysis of benchmarking datasets was carried out.	
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>	
Typographical arrangement is excellent, a visually pleasing LaTeX template was used. While by no means perfect, the level of English is acceptable and by and large the thesis is easy to read. There is mostly no difficulty in understanding the points being made. Some attention points are missing articles, and the use of the conditional tense.	

Selection of sources, citation correctness

A - excellent.

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.

The most relevant sources are there and have been cited correctly.

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 student succeeded in publishing the method for adding temporal consistency to Object Scene Flow at a conference/workshop. The performance of the proposed method on the Kitti '15 dataset for scene flow is a close second overall, but is better than the state-of-the-art in several benchmark subcategories. The experimental validation of the proposed method is methodical and complete.

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.

Overall an excellent thesis. Good problem definition and logical organisation of the work. Excellent evaluation and analysis of the implemented methods.

Questions:

- Explain Object Scene Flow step-by-step.
- What makes (Object) Scene Flow more accurate than regular Optical Flow? What are the main contributing factors? Discuss advantages and drawbacks.
- How can temporal consistency be enforced? Explain why you chose the presented method?

I evaluate handed thesis with classification grade **A - excellent.**

Date:

Signature: