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In regard to your
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Place, Date

Deggendorf,
2023-08-16

Supervisor Report of Mr. Manaf Ahmed's Master's Thesis on "Evaluation of self-supervised learning for vehicle-type detection"

Dear colleagues,

Mr. Ahmed investigates in his thesis the application of self-supervised learning methods, specifically SimCLR and SimSiam, for vehicle appearance identification in complex autonomous driving environments. Comparing these methods with supervised learning, the study demonstrates that both SimCLR and SimSiam outperform supervised learning in accuracy, with varying strengths in classification and bounding box precision. The research highlights the importance of backbone architecture choice based on dataset size and image resolution, contributing valuable insights for addressing domain gaps in the automotive industry and enhancing autonomous driving systems' capabilities.

Mr. Ahmed's thesis was graded according to the grading scheme I communicated at registration as follows:

- Motivation of topic: 6/6 points
The thesis motivates the problems and investigated research questions well.
- Review of related work: 10/10 points
The thesis reviews the state of the art in depth in an understandable way.
- Methodology and scientificness: 10/12 points
The methodology proposed is sound and mainly applies the state of the art, but does not substantially extend it.
- Quality of experimental results: 12/12 points
The results achieved are decent and their discussion is reasonably long.
- Visualization and formatting: 3/5 points
Formatting of the thesis is improvable, in particular mathematical expressions.
- Initiative and independence: 5/5 points
Mr. Ahmed worked independently on his thesis and regularly asked for feedback. This helped to improve the experimental results.

The sum of 46/50 possible points results in a **1.3** (on a scale 1 to 5, where 1.0 is the best) for the thesis according to my grading scheme.

Sincerely,

Patrick GLAUNER

*Professor of Artificial Intelligence
Department of Applied Computer Science*