Supervisor's Opinion of Final Thesis

Název práce	Design and Implementation of an End-to-End Speech Assistent
Jméno autora	Felix Staudigl
Typ práce	diplomová
Fakulta/ústav:	Fakulta elektrotechnická (FEL)
Thesis reviewer	Sascha Schade Dipl.-Ing. Dipl.-Ing. (RWTH Aachen University) Head of Software / Roboticist Robotise GmbH Germany

Assignment (very challenging)

The student has discussed state-of-the-art approaches for a newly developed end-to-end speech assistant in a very specific use case with a very demanding requirement of full offline-capability and implemented an excellent solution.

Satisfaction of assignment (overfulfilled [on basis of shifted focus])

Literature research was very extensive as it provided a good basis for a solid and state-of-the-art implementation. Carefully considering newest research results raised in importance during presenting intermediate results. The design of the system was taken very seriously as the code is running in production and facing real customers in a very critical business environment. The implementation was done accordingly to the latest software engineering principles, including modern microservices and continuous integration and continuous delivery pipelines. The required confidentially of the work the lack of access to real world test samples (due to data protection law, et cetera) made the task of comparison and evaluation difficult to impossible to achieve. Evaluation is an ongoing process and was also partially removed from the thesis by company's request of confidentiality. The work presented to the company has proven to have a great business value.

Method of conception (A fulfilled with very minor objections)

The student chose the Design Science Research Methodology (DSRM) which is very appropriate for this thesis and was carefully followed. The requirements for the end-to-end speech assistant, and its implications to the technical possibilities, were intensively discussed and set accordingly in strong collaboration with the business development department. The offline requirement is a clear requirement from the use case which made access to other solutions (Google, Amazon, IBM) impossible. The review of the literature, the design and the implementation were done in due time and met the agreed deadlines. The part of comparison and evaluation was conducted but stripped due to confidentially requirements.

Technical level (A+ outstanding)

As research literature shows, speech processing and synthesis are very challenging tasks. Gaining an in-depth understanding of broad technologies in short time and presenting results in a concise manner was done outstanding well. The approach of a system consisting of microservices proved to be very successful and was a challenging task. The fully adhered software development principles (test-driven development, agile sprints, feature branches, merging) are on a very professional level and brought software development to a next level

at Robotise GmbH. The developed system outperforms in the given use-case any other systems.

Formal and language level, scope of thesis (A excellent)

The work presented is well structed and uses appropriate graphs to illustrate key principles. Language is very professional and concise.

Selection of sources, citation correctness (A excellent)

Extensive literature was researched, clustered and referenced appropriately. All relevant resources were used. References were given correctly and credit was given when work was incorporated into the thesis and work.

Additional commentary and evaluation

The extensive research made it possible to develop a solution for the company which outperforms all other possible solutions. The developed work has so far proved to be easily to maintain and has a high quality and set new standards at the company. As the work has become a crucial part of proprietary IP for the company, confidentiality reasons limited the amount of work which was possible to be presented in the report.

The work and thesis present an outstanding result to the company. I evaluate the thesis with grade **A+ outstanding**.

Dipl.-Ing. Dipl.-Ing. Sascha Schade