Review of Master's Thesis

Student: Krasňanský Milan, Bc.
Title: Radar Signal Processing for Radio Altimeter (id 17508)
Reviewer: Maršík Lukáš, Ing., UPGM FIT VUT

1. **Assignment complexity** — **more demanding assignment**
   I consider this assigment as more difficult. Student had to study various topics, such as landing phases, altimeters' principles, or radar signal processing and moving object's distance measurement.
2. **Completeness of assignment requirements** — **assignment fulfilled**
   The assigment was fulfilled without any objection.
3. **Length of technical report** — **in usual extent**
   The page count of the technical report is in usual range.
4. **Presentation level of technical report** — **89 p. (B)**
   The report has logical structure. Chapters' content is mostly well balanced. The only major remark I have is the mentioned 2D DFT detection method placed couple pages before the DFT/FFT itself is explained in the "Signal processing" chapter. The report is well understandable for a reader otherwise.
5. **Formal aspects of technical report** — **96 p. (A)**
   The report is typed using LaTeX and looks very nice and clean. The text is written in very good (almost native-like) English.
6. **Literature usage** — **91 p. (A)**
   The bibliography contains large number of references (24) and approximately one third are good quality publications (books or papers). All adopted ideas and images are properly cited and well separated from the author's ones.
7. **Implementation results** — **83 p. (B)**
   The implementation consists of the Matlab script processing the radar signal and generating height output for the altimeter. The application produces stable and believable output. Unfortunately, some methods was not used according to the usual signal processing (e.g. summing of frequency spectra, finding only some peaks) and thus the algorithm didn't show its full potential.
8. **Utilizability of results**
   The results of this work can be used for embedded implementation of the altimeter's core algorithm. The code itself needs some modifications and tuning indeed.
9. **Questions for defence**
   1. Which of the radar module properties (e.g. modulation bandwidth, antenna characteristics, pulse operation) could help you get better results and how?
10. **Total assessment** — **87 p. very good (B)**
    I really apreciate the quality of the report written in very good English. The implementation generates believeable outputs, however, verification will be necesary in the future of course. The major remark that influenced the final marking is connected to the above mentioned methods that were used quite inefficiently in my opinion.

In Brno 12. June 2017

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