

Examiner's Report on M.Eng Thesis

“Implementation of an autonomous star recognition algorithm using hardware-software co-processing approach”

Submitted by Dang Le Dang Khoa

This thesis concerns about the implementation of a star tracker for attitude determination of satellite using both the processing system (software) and the Programmable Logics (Hardware). Performance in terms of run-time, power consumption and area of implementation is analyzed.

The thesis is poorly written with many careless mistakes. The English needs much improvement. Notwithstanding, the candidate has done a satisfactory work for a Master's thesis. However, there are places in the thesis where some corrections or explanations need to be made before the degree can be awarded which I will elaborate below.

1. There are many careless mistakes in the thesis. Tables and figures are not explained in the body of the thesis, equations are given without explanations, unfinished sentences, etc. All these are indicated on the relevant pages in the thesis. Please correct and give explanations as requested.
2. Page 29. Please explain why the threshold is chosen to be 70 to separate star clusters from the background. What will happen if the threshold is reduced or increased?
3. Conclusion must be made for the study, so I would like to see a chapter on conclusion which includes the following:

- (a) One of the objective of the candidate's thesis is to implement and evaluate the performance of a star tracking algorithm, so what is the conclusion of the evaluation of the performance? Can it be used for the attitude determination sensor mounted on a spacecraft?
- (b) Another objective of the thesis is to benchmark and optimize the algorithm in terms of the power consumption and the area of transistor implementation. What is the conclusion? What is the benchmark now? Did the candidate do optimization? What I got from the thesis are just the results of the power consumed, but it is necessary that the candidate describes how he did the optimization.