

Review of the Master's thesis

Author: Bc. Jan Saro

Title: Distributed task Mapping in Reconfigurable Networked Embedded Systems

Supervisor: Ing. Přemysl Šůcha, Ph.D.

This thesis deals with the distributed mapping of tasks in reconfigurable networks of embedded devices. The objective of this problem is to minimize the energy consumption of the network and extend the life time of the network. The problem is solved by a distributed heuristic algorithm based on a constructive approach with a backtracking step. The solution is compared with the same heuristic that uses Integer Linear Programming instead of the constructive approach.

To the best of my knowledge there is no similar work addressing an analogous problem in the literature. Jan Saro has shown that he is able to work with literature and he has proved that he is able to work independently. The proposed algorithm is able to solve a real word problem important for the design of embedded systems. The presented experiments show very promising results.

On the other hand, I am quite sure that it would be possible to simplify the algorithm. From my point of view states of the algorithm "Results" and "Verdict" (see Figure 12) are not necessary. These states increase the communication complexity of the algorithm. The decisions connected with those states can be made by the node that initiated the "Alert" message by monitoring the communication in its neighbourhood. Nevertheless, the aim of the thesis was to prove the fundamental idea of the algorithm which has been fulfilled.

With respect to the above mentioned pros and cons I propose to grade this thesis as "excellent" (A).

26th of May 2015 in Prague

Přemysl Šůcha

TNO

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Subject: Review of the Master's thesis

Distributed task Mapping in Reconfigurable Networked Embedded Systems

Dear Mr. Saro,

Your thesis – entitled **Distributed task Mapping in Reconfigurable Networked Embedded Systems** – studies and introduces an heuristic algorithm for task allocation at networked embedded systems. The proposed solution deals with important and difficult requirements for the design of networked embedded systems, such as resource and energy constraints, and dynamic network structure.

The thesis is excellent in readability, with a proper introduction of the problem and explanation of the investigated solution. The state of the art in the area was thoroughly investigated and the proposed solution is well compared against an optimal (exact) solution approach. Results are clearly presented and are demonstrative of the claims made at the beginning of the text. The proposed solution is described in details and the experiments can be coherently reproduced based on this description. In every aspect, the thesis and the proposed solution fulfil the expectations and the challenges offered to you in your Master assignment.

For all that, I attribute as my review an A (excellent) grade.

In resume:

Title of the Thesis: Distributed task Mapping in Reconfigurable Networked Embedded Systems

Student: Jan Saro

Reviewer: Dr. Rer. Nat. Julio A. de Oliveira Filho

Date: May 26, 2015

Best wishes for your Thesis defense.

Sincerely


Dr. Rer. Nat. Julio A. de Oliveira
Filho

cc: P. Sucha