Scuola Superiore
Sant'Anna

Subject: Dissertation Thesis Review

The thesis written by Jiri Trdlicka for his PhD dissertation deals with the important problem of optimal routing in distributed real-time sensor networks. The objective is to minimize energy consumption. The network is assumed as a multi-commodity, in the sense than multiple unrelated flows can traverse the network.

The thesis is generally well written and presents important original results that have been published in international peer-reviewed journals. I particularly liked the use of the dual problem to derive a distributed routing algorithm in Chapter 3.

Some minor comments follows.

1) The English language could be improved, especially in the introduction which seems to have been written sliglthly less carefully than the rest of the paper.

2) Again in the introduction, the model assumptions ought to be explained a bit better. For example, the author does not explain why the graph has directed edges: while it is true that in WSN it is not possible to ensure that two nodes can send messages each other in both directions, a little bit of extra discussion of the model would not hurt.

3) Also, it would be nice to specify how the assumptions that have been made relate to real networks. This would give the interested reader an immediate feeling of the pros and cons of the proposed methods, in which systems they can be applied straightforwardly, and in which systems the assumptions do not hold.

Summarizing, I believe that the thesis is of good quality and my judgement is positive. I enjoyed reading the thesis and I recommend a positive outcome of the doctoral thesis defence.

Pisa, 13 February 2012,

Giuseppe Lipari