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To Whom It May Concern

It gives me great pleasure to nominate the MSc thesis *"Navigation on an RFID Floor"*, by Robert Johansson for the SAIS AI Master's Thesis Award 2009.

To the best of my knowledge, this thesis is the first work to propose, and to develop to a significant extent, a very exciting and promising idea: to use a grid of RFID tags buried under the floor as a physical memory in the environment, to support the computation and storage of environment-related information — e.g., navigation paths to a set of pre-defined goals.

Robert Johansson illustrates this idea by showing how a simple robot can perform robot mapping and path planning using the tags in the floor. The following are features of the approach which I regard as most notable: (a) there is no notion of global metric reference system; (b) in particular, the robot does not need any self-localization to build a map and to use it for navigation; (b) hence, the approach can be applied to robots with very limited sensing and computing resources; (c) the map building process is life- long; (d) the (partial) map built by one robot can be completed or used by another one, without any need for explicit communication.

The thesis by Robert Johansson has, in my opinion, all the best ingredients for a MSc thesis:

1. it starts from an interesting and original intuition;
2. it develops it to an extent that is sufficient to properly evaluate its potential;
3. it presents detailed algorithms that make the results fully reproducible;
4. it provides sound experimental validation under real conditions; and
5. it is likely to have a very strong impact on the field.

The last of the above ingredients, is a direct consequence of the previous ones: because of its novelty, potential, and sound development, this work is likely to inspire many people to continue along and beyond this direction. An early confirmation of this claim is that a paper extracted from this thesis has been accepted to the IEEE International Conference on Robotics and Automation 2009, arguably the prime venue in the field of robotic research.

Sincerely,

Prof. Alessandro Saffiotti
Head of the AASS Mobile Robotics Lab