

**School of Computer Science
M.S. Final Defense**

By

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Robot localization is traditionally achieved using explicit map-based representations. However, this approach tends to be task and environment dependent. Different localization algorithms are typically needed for robots that operate in different environments, use different sensor modalities, or have different degrees of freedom. The design of these algorithms is often similar, but there are enough differences to make the transitions difficult and time consuming. To shift the burden from robot designers unto the robots themselves, we propose to remove the dependence on known representations and let robots develop implicit internal representations. Implicit localization is developed through the processes of abstraction and anticipation. Evaluation is performed by measuring performance at the given task. This formulation allows localization to be learned in a general manner, as needed by the task at hand. This approach simplifies robot design and allows the creation of more flexible robots.

Date: Friday, May 5, 2006

Time: 12:00 p.m.

Place: Info Tech Conference Room, EL 224

**Committee members: Dr. Dean Hougen – Chair
Dr. Amy McGovern
Dr. Andrew Fagg**

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