The brain circuitry involved in encoding space in rodents has been extensively tested over the past thirty years, with an ever increasing body of knowledge about the components and wiring involved in navigation tasks. The learning and recall of spatial features is known to take place in and around the hippocampus of the rodent, where there is clear evidence of cells that encode the rodent's position and heading. Many components of hippocampus have been modelled by computer simulation, and there exist some well understood computational models that exhibit similar characteristics to the recordings from the hippocampal complex.

RatSLAM is a robotic navigation system based on current models of the rodent hippocampus. RatSLAM has been demonstrated performing real time, real world, simultaneous localisation, mapping and navigation from monocular vision, showing its effectiveness as a robot navigation tool. Furthermore, some of the modifications necessary to make the models of hippocampus work effectively over long periods in large and ambiguous environments raise some new questions for further biological study.

Professor Gordon Wyeth, Ph.D.

Gordon Wyeth, Ph.D. recently joined the Queensland University of Technology, after leaving his previous position as Director of Mechatronic Engineering at the University of Queensland. He is a former President of the Australian Robotics and Automation Association and has served in various positions in the RoboCup International Federation. He is the chief investigator on various Australian Research Council and industry projects that aim to build practical and useful robots that exploit, explain and expand models of living systems.

Monday, February 8
12:00 - 01:00 pm
Carnegie Mellon, Room 1064

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