"Navigating the Micro World"
MEMS Vision-Guided Assembly

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The robotics research community has a tradition of tackling grand challenges in automation and sought to replace the human in many skilled tasks. This lecture will consider some of the lessons that have been learned in our attempts to replicate the intelligence and skill attributes of humans in automatic systems. These thoughts are then placed in the context of the challenges that we face in micro- and nano-systems. An analogy is drawn between the uncertainties of robot navigation and the uncertainties inherent when working at the micro-scale. It will be argued that techniques from robotics have an important role in enhancing system and operator performance as humans learn to interact at the micro-scale. The lecture will be illustrated with examples from the Argus project at SIMTech. This includes techniques of navigation based on multiple-view and multiple scale imaging. The talk will conclude with a summary of the key research topics as we seek an optimal balance between automation and human interaction in micro-scale tasks.