

**SEMINAR**  
**Department of Mechanical Engineering**  
**SUNY at Stony Brook**

**“Digital Resource Management within the Scottish Manufacturing Institute (SMI)”**

**Dr. Theodore Lim and Mr. James Ritchie**

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Heriot-Watt University, Riccarton Campus  
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Room 250 Light Engineering

**Abstract**

The Digital Tools Manufacturing Group (DTMG) is one of the pillar themes of the Scottish Manufacturing Institute (SMI), an Innovative Manufacturing Research Centre based at Heriot-Watt University. The aim of the group is to exploit emerging digital technologies to create pioneering computer-based tools for design and manufacturing processes and providing efficient solutions. Our vision is to bridge the gap between the University and Industry, creating synergy by combining theoretical and pragmatic knowledge. This presentation aims to provide an overview of the research activities of the SMI, the DTMG and its management. The areas of research covered in this presentation include:

- Immersive VR in Production
- Feature Recognition
- Rapid prototyping
- Haptics for manufacturing and assembly

**About the Speakers**

**Mr. J.M. Ritchie: Senior Lecturer:** Mr. Ritchie worked as a Teaching Company Associate and Senior Production Engineer with Ferranti (Scotland) Ltd before joining Heriot-Watt University as a member of the academic staff in 1987. Mr. Ritchie is a Senior Lecturer in Mechanical Engineering at Heriot-Watt University, specialising in the areas of design, manufacturing and manufacturing management. Recent research interests have included rapid prototyping, virtual reality applications in design and manufacturing, design process capability analysis, laser machining and the application of Taguchi methods in the baking industry. He is also Academic Director of the University's Advanced Manufacturing Unit and is the co-author of two recent textbooks on engineering design and manufacture. In addition to its sub-contract and teaching activities the AMU has been involved in a wide range of CNC manufacturing research, particularly in the fields of CNC milling, laser cutting, feature recognition and tool wear monitoring.

**Dr. T. Lim: Research Associate:** Dr. T. Lim worked as an engine and airframe specialist in the Air Force prior to pursuing further studies in Mechanical Engineering. He graduated with Mechanical Engineering with Computer-Aided Engineering from Heriot-Watt University in 1997 and obtained his PhD 2000. He has been with the Department of Mechanical Engineering as a Research Associate since 2001 and is also active in the Department of Physics. He has published several papers on Feature Recognition, Optimising Tool Selection, Optical networks and computing. He is also the co-author of the book '3D Modelling with ACIS'. His research interest includes Feature Recognition, CAD/CAM/CAE, Computational geometry and analysis, Virtual Reality, and Biomaterials. He is currently involved in the SMI research programme in the area of Haptics for manufacturing and assembly.