

Steven Hammer

BEng (Hons.) PhD AMIMechE

Email: steven.hammer@ed.ac.uk
Web page: <http://www.see.ed.ac.uk/~shammer1/>

Profile

I am a versatile mechanical design engineer with a broad skill set and experience in design and development of mechanical equipment. I am creative, diligent and driven in my work, and enjoy working individually and in teams to develop new products. I am also eager to develop - I enjoy the challenge of new working environments and industries, and I am committed to professional development through registering for CEng status with the IMechE.

Roles

Design - conception, design, specification and assembly of mechanical equipment. I have designed novel devices to test ultrasound systems, control biological reactions in microfluidic chips and measure biofluorescence using sensitive optical detectors. I have created designs for individual components using Solid Edge and Pro/Engineer CAD software, supervised the machining of components, and specified appropriate subcontractors where necessary. I have specified electronic control units where appropriate, installing, assembling and programming them where required.

Modelling and visualisation – creating mesh models for import into CFD software. I have used analysis tools (Fluent, ANSYS, Materialise Magics) to prepare, analyse and simulate artery models and components I have designed.

Programming - development of programs to control mechanical equipment using LabVIEW. I have also created programs to manipulate and analyse ultrasound images using machine vision and image processing packages in LabVIEW. I have also used MATLAB to perform image processing on ultrasound images.

Experimental work - operating lab equipment, recording results, graphing data, performing statistical analyses. I have interfaced different electronic equipment (e.g. laser vibrometer, stepper-motor control units, video capture card, data acquisition hardware, optical detectors) to data collection software to collect and analyse data.

Communication - presentation of results at conferences and in peer-reviewed journals. Reporting key findings to colleagues and investors in technical reports and presentations. Working with colleagues from different backgrounds (biological sciences, medicine, technical) on various projects and sharing results with them.

Employment History

December 2007 –February 2009 Design Engineer, Lab901 Ltd., Loanhead

In Lab901, I worked on ITI Scotland funded research into the development of lab automation devices. I developed the mechanical design of optical measurement techniques and biological test devices for integration into a bench-top blood analysis system. I also had responsibility for the delivery of technical reports, analyses and results to stakeholders in the project.

January 2002 – October 2007

Research Associate, Medical Physics, The University of Edinburgh (inc. part-time PhD)

I was employed as part of an EPSRC project investigating arterial disease and CFD modelling of arteries using 3D ultrasound. I developed a 3D ultrasound system for scanning patients and carried out various image processing and programming tasks associated with the development of personalised artery models for simulation with CFD packages. I also designed a high accuracy mechanical 3D ultrasound system, and developed a mechanically-controlled wall motion test device for evaluating ultrasound wall motion techniques.

Education

April 2009 – present MSc in Medical Physics, The University of Edinburgh

I am now studying full-time in Medical Physics, developing a research tool for the calibration of cardiac ultrasound scanners. My studies involve mechanical design, the use of CAD software, programming using LabVIEW and experimental analysis of ultrasound scanner accuracy.

2003-2008 PhD (part-time) in Medical Physics, The University of Edinburgh

My PhD studies in Medical Physics confirmed my interest in imaging science and research. My PhD covered the topics I worked on as a Research Associate. These include the development of 3D ultrasound imaging techniques, image processing of ultrasound images, and the development of 3D computational models of arteries.

1996-2000 BEng. (Hons.) Mechanical Engineering, The University of Edinburgh Grade: II:1 (69%)

My degree in mechanical engineering built on my earlier interest in machines and computing. I was especially interested in mechanical design, solid mechanics, fluid mechanics, computer aided design and simulation. I also did courses on project management and accounting.

Computing packages experience

3D/CAD

Rhino (surface modeller); Solid Edge and Pro/Engineer (CAD/drafting); Materialise Magics (mesh editing/rapid prototyping software); ParaView (3D data visualisation and rendering package)

Simulation

Fluent (CFD solver), ANSYS (FE package)

Programming

LabVIEW (equipment control, image processing); Matlab (mathematics and image processing)

OS/Other Packages

Windows – power user ; UNIX/Linux – advanced user. MS Office, LaTeX, email, Internet, graphics packages...

References

Mr. Tom Anderson
Senior Research Fellow
Medical Physics and Medical Engineering
The University of Edinburgh
The Chancellor's Building
49 Little France Crescent
Edinburgh
EH16 4SB
tom.anderson@ed.ac.uk
(0131) 242 6310

Dr. Peter Hoskins
Reader
Medical Physics and Medical Engineering
The University of Edinburgh
The Chancellor's Building
49 Little France Crescent
Edinburgh
EH16 4SB
p.hoskins@ed.ac.uk
(0131) 242 6305