Curriculum Vitae

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Personal Profile

Focused and motivated researcher at NUI Galway, working in the field of cardiac biomechanics and computational modelling. My main interests lie with cardiac tissue characterisation (structure and mechanics), cell and tissue remodelling, and biophysics modelling. I am always interested in expanding my current skill set, particularly in the areas of solid mechanics, machine learning, and numerical modelling.

Research

Postdoctoral Researcher Aug 2018 – present

National University of Ireland Galway

- Computational investigation of cellular remodelling within the heart wall in response to pathological loading conditions.

PhD Biomedical Engineering Nov 2014 – Aug 2018

National University of Ireland Galway

- Computational and experimental material science, with a focus on passive and contractile biological cell/tissue mechanics.

Teaching Experience

- Software packages Matlab and Abaqus (Undergraduate level)
- Experimental and Computational Biomechanics (Masters level)
- Centre for Talented Youth Ireland – Introduction to Engineering (Primary school level)

Education

B.E. Biomedical Engineering (1.1) Sep 2010 – May 2014

National University of Ireland Galway

- *Main courses of interest studied*: Biomechanics, Computational Modelling, Project Management, Metals and Metals Processing, Polymer Engineering, and Thermodynamics.
- *Final Year Project*: "Viscoelastic characterization of in-vitro thrombus and a hydrogel analogue".

Leaving Certificate Jun 2010

Mountmellick Community School, Laois

- Achieved first place in school year with final exams (85.8% - 515/600 points).

Publications

McEvoy, E., Deshpande, V.S., McGarry, P., *Transient active force generation and stress fibre remodelling in cells under cyclic loading*. **Biomechanics and Modeling in Mechanobiology** (in review)

McEvoy, E., Shishvan S.S., Deshpande, V.S., McGarry, P., *Statistical Mechanics of Spread Cells: Influence of Ligand Density and Substrate Stiffness*. **Biophysical Journal.** doi:10.1016/j.bpj.2018.11.007

McEvoy, E., Holzapfel, G.A., McGarry, P., 2018. *Compressibility and Anisotropy of the Ventricular Myocardium: Experimental Analysis and Microstructural Modelling*. **J. Biomech. Eng**. doi:10.1115/1.4039947

McEvoy, E., Deshpande, V.S., McGarry, P., 2017. *Free energy analysis of cell spreading*. **J. Mech. Behav. Biomed. Mater.** 74. doi:10.1016/j.jmbbm.2017.06.006

Conference Paper Awards

- 3rd Prize in ASME Paper Competition (*World Congress of Biomechanics, Dublin, IE*) (2018)
- 3rd Prize in PhD Paper Competition (*Summer Biomechanics, Bioengineering, and Biotransport Conference, Tucson, AZ*) (2017)
- 1st Prize for Best Paper in Biomechanics (*Bioengineering in Ireland 22, Salthill Hotel*) (2016)
- 3rd Prize in PhD Paper Competition (*Sir Bernard Crossland Symposium, QUB*) (2016)

Achievements and Interests

- Irish Research Council Postgraduate Scholarship (2015-2018)
- Hardiman Postgraduate Scholarship (2014-2015)
- University Scholar NUI Galway (2012, 2013, 2014)
- All Ireland Scholarship (JP McManus, 2010-2014)
- 1st Prize in Medtech Innovation Design and Startup Competition (Aug 2017)
- University rowing team member (2010 – 2012)
- Singer/ songwriter of folk, blues and traditional music
- Travel (international conferences, volunteering in Zambia, European InterRail)

Work Experience

Medtronic, Galway May - Oct 2014
Associate R&D Engineer

- The main body of my time was spent on the continuous improvement of current trans-aortic valve implant (TAVI) delivery systems. Contributed to the design iteration of a novel coronary stent delivery balloon and related manufacturing processes. Worked with an interdisciplinary team of R&D engineers, manufacturing engineers, and production operators.

Vistakon (Johnson&Johnson), Limerick Apr - Aug 2013
Moulding Engineer (Co-op Placement)

- Primarily involved with DOE (Design of Experiments) work for injection moulding and large-scale production of contact lenses. Developed code for data acquisition and analysis, in addition to updating dynamic charts for lens yield, production line losses, and identification of the areas of highest unplanned downtime.

O'Laighin Research Group, NUI Galway Jun - Aug 2012
Bioelectronic Engineering Intern

- Worked mainly on the design of a venous pressure sensor for the lower limbs. High involvement with microprocessor coding (C++, Arduino), prototyping (Arduino Microprocessor), and enclosure design (Autodesk Inventor) for an accelerometer-based device that incorporated real time data collection. The project also involved data processing and event-based activity (Matlab).

Key Skills

- Numerical modelling (hyperelasticity, active tissue mechanics, cell biomechanics)
- Software languages: Fortran, Python, Matlab, and Excel VBA
- Finite element modelling (Abaqus)
- Geometry modelling packages AutoDesk and SolidWorks
- Experimental design and analysis (soft tissue, cell loading)
- Statistical analysis (Monte-Carlo, Minitab)
- French and Irish (limited working proficiency)
- Full driving licence

References available on request