kevinmoerman.org

Open-source projects

GIBBON
The Geometry and Image-Based Bioengineering add-on

Programming

MATLAB ★★★★★
LABVIEW ★★★☆☆
Python ★★☆☆☆
Julia ★★☆☆☆

CAD & FEA

FEBio ★★★★★
ABAQUS ★★★☆☆
PTC/Creo ★★★★★
SolidWorks ★★★☆☆

Robotics Design

References

Dr. Ciaran Simms
Dr. Aart Nederveen
Prof. Hugh Herr

Kevin Mattheus **Moerman**

Biomechanical & Design Engineer

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Experience

April. 17 - Now **Research Scientist** Biomechatronics, MIT Media Lab, Cambridge, MA, USA
As Research Scientist I lead the research into the design and development of novel biomechanical interfaces (such as prosthetic sockets) and co-supervise PhD students and undergraduate researchers.

Sept. 15 - April. 17 **Post Doctoral Associate** Biomechatronics, MIT Media Lab, Cambridge, MA, USA
The development of a framework for the automated design and optimization of patient-specific, 3D printable prosthetic sockets. Act as *Program Manager Mechanical Interfaces* I co-supervise PhD students and undergraduate researchers.

April 13 - Now **Visiting Research Fellow** University of Dublin, Trinity College, Dublin, Ireland
A collaborative position through which I advise researchers on soft tissue biomechanics and teach them to use GIBBON for inverse finite element analysis.

Jan. 15 - Sept. 15 **Research Affiliate** Biomechatronics, MIT Media Lab, Cambridge, MA, USA
Development of computational design methods for prosthetic devices. Co-supervisor and co-promotor for a PhD student.

2011 - 2015 **Post Doctoral Research Fellow** Academic Medical Centre, Amsterdam, The Netherlands
Development of novel methods for understanding and early detection of pressure ulcer development based on Magnetic Resonance Elastography, SPAMM tagged MRI and inverse finite element analysis.

2006 - 2008 **Teaching Assistant** University of Dublin, Trinity College, Dublin, Ireland
Part-time teaching assistant position (during PhD) on MATLAB for undergraduate mechanical engineering students.

2003 - 2006 **Design Engineer** Lely Technologies N.V., Maassluis, The Netherlands
Design and development of agricultural robotic systems, e.g. a robotic feed pusher and a solar energy powered mobile feeding robot.

Education

May. 17 - June 17 **Kaufman Teaching Certificate Program** MIT, Cambridge, USA

Jan. 13 - April 13 **Course: Advanced MR Physics** Universiteit Utrecht, Utrecht, The Netherlands

Aug. 06 - Feb. 12 **PhD in Bioengineering** University of Dublin, Trinity College, Dublin, Ireland
Thesis: *An Improved Framework for the Inverse Analysis of Skeletal Muscle Tissue In-vivo.* Non-invasive assessment of the mechanical properties of skeletal muscle in-vivo based on dynamic MRI and inverse finite element analysis.

Aug. 08 - Aug. 09 **Postgraduate Diploma in Statistics** University of Dublin, Trinity College, Dublin, Ireland

Sep. 06 **Course: Advances in Continuum Mechanics** Durham University, Durham, UK
Mathematics for Engineers EPSRC Summer School: *Advances in Continuum Mechanics, The Nonlinear Deformation of Solids.*

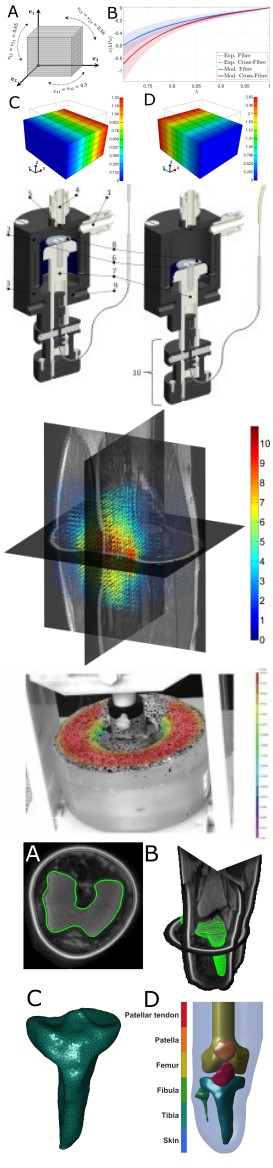
2004 - 2005 **MSc in Bioengineering** University of Dublin, Trinity College, Dublin, Ireland
Thesis: A Finite Element Model of the Human Head to Predict and Analyse Brain Injury due to Blast-Induced Acceleration

2000 - 2004 **BEng in Mechanical Engineering** The Hague University of Appl. Sciences, The Hague, NL
Major: *Product Design.* Final Project: *"The Design and Development of an Autonomic Solar Powered, Mobile Concentrate Feeding Robot for Cows".*

Patents

A feeding installation: EP1683411, AU2005101010, NZ544606, NL1028069, NL1029454

Publication figures



Languages

English ★★★★★
Dutch ★★★★★
German ★★☆☆☆

Awards

2010 **Engineers Ireland Biomedical Research Medal 2010** — Engineers Ireland
Awarded at the 16th Annual Bioengineering in Ireland Conference. Paper: *Towards the Non- Invasive Determination of the Mechanical Properties of Living Human Soft Tissue.*

2009 **Bioengineering in Ireland Bronze Medal** — Royal Academy of Medicine Ireland
1st Prize for best overall paper at the 15th Bioengineering in Ireland Conference, awarded by the Royal Academy of Medicine Ireland. Paper: *A validation method for motion tracking techniques based on tagged MRI.*

2005 **KIVI Dutch Bachelor Thesis Prize** — The Royal Netherlands Society of Engineers, KIVI
The 3rd prize for best Dutch bachelor thesis. Thesis: *The Design and Development of Autonomic Solar Powered, Mobile Concentrate Feeding Robot for the Australian Dairy Industry.*

2004 **VSBfonds international student scholarship** — VSBfonds
€ 7000 Scholarship for education or research outside the Netherlands. Awarded to a single shortlisted candidate per university by the VSBfonds organisation.

Selected publications

Full list →

- Moerman KM, Simms CK, Nagel T. **Control of tension-compression asymmetry in Ogden hyperelasticity with application to soft tissue modelling** *J Mech Behav Biomed Mater. 2016;56:218–28.*
- Moerman KM, Sprengers AMJ, Nederveen AJ, Simms CK. **A novel MRI compatible soft tissue indentor and fibre Bragg grating force sensor** *Med Eng Phys, 2013; (4):486–99.*
- Moerman KM, Sprengers AMJ, Simms CK, Lamerichs RM, Stoker J, Nederveen AJ. **Validation of continuously tagged MRI for the measurement of dynamic 3D skeletal muscle tissue deformation** *Medical Physics. 2012; 39(4):1793.*
- Moerman KM, Holt CA, Evans SL, Simms CK. **Digital image correlation and finite element modelling as a method to determine mechanical properties of human soft tissue in vivo** *Journal of Biomechanics 2009; 42(8):1150–3.*

Conference and editorial board experience

April 2017-Now	**Section Editor: Hardware metapapers**	The Journal of Open Hardware
June 2016-Now	**Steering committee member**	EngrXiv: The Engineering Archive
March 2016-Now	**Editorial board member**	The Journal of Open-Engineering
Feb 2016-Now	**Editorial board member, co-founder**	The Journal of Open-Source Software
Dec 2015-Now	**Subject Editor**	The RIO Journal
2014	**Organizer/chair for special sessions**	World Congress of Biomechanics 2014
2014	**Committee member, chair special sessions, workshop**	CMBBE 2014
2013	**Organizer/chair for special session**	CMBBE 2013

Extra-curricular activities

2014-2015	**Youth Judo instructor**	Baambrugge, Netherlands
2008-2009	**Vice-Captain**	Dublin University Judo Club
2007-2009	**Travel Officer**	Dublin University Photography Association
2007-2009	**Ju-Jutsu Instructor**	Dublin University Judo Club