



Kevin Mattheus Moerman

Computational Mechanics & Design Engineer

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Experience

Aug. 18 - Now **Research Fellow** [Engineering & Informatics, NUIG, Galway, Ireland](#)
A computational modelling framework for the evaluation of mechanical thrombectomy devices. The development of advanced automated meshing techniques, combined with constitutive modelling of complex clot mechanical behaviour.

April 17 - Aug. 18 **Research Scientist** [Biomechanics, MIT Media Lab, Cambridge, MA, USA](#)
Leader of the *Computational Biomechanics* research track, which focusses on the development of novel computational (and experimental) methods to study tissue biomechanics, and to design devices that interact with tissue. Responsibilities: grant writing, co-supervision of graduate and undergraduate students.

Sept. 15 - April. 17 **Post Doctoral Associate** [Biomechanics, MIT Media Lab, Cambridge, MA, USA](#)
Development of a framework for automated design and optimization of subject-specific prosthetic sockets. Leader of the *Computational Biomechanics* research track. Responsibilities: Co-supervisor of graduate and undergraduate students.

April 13 - Now **Visiting Research Fellow** [University of Dublin, Trinity College, Dublin, Ireland](#)
Collaboration on computational biomechanics, inverse finite element analysis, and the use of the GIBBON toolbox.

Jan. 15 - Sept. 15 **Research Affiliate** [Biomechanics, 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 non-invasive analysis of soft tissue mechanical properties (and pressure ulcers) based on inversion of Magnetic Resonance Elastography data, 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"*.

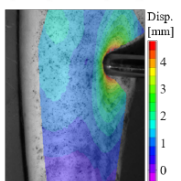
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Open Source Projects



GIBBON
The Geometry and Image-Based Bioengineering add-on



MultiDIC

Programming

MATLAB ★★★★★
Julia ★★★★★
LABVIEW ★★★★★
HTML ★★★★★

CAD & FEA

FEBio ★★★★★
ABAQUS ★★★★★
PTC/Creo ★★★★★
SolidWorks ★★★★★
Inventor ★★★★★

Robotics Design

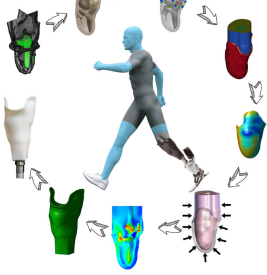


References

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

Patents

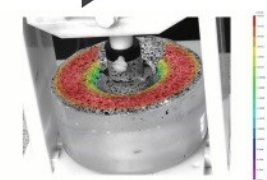
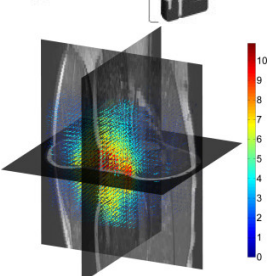
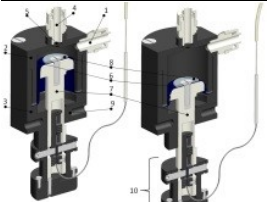
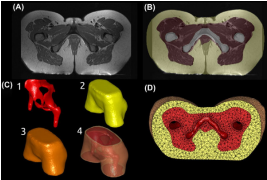
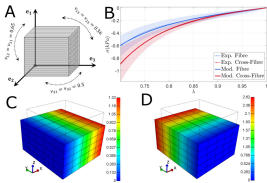
WO2017123729A1



EP1683411



Publication figures



Languages

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

Awards & Grants

- 2017 **Research grant: \$1,600,000 (R01 EB024531-01)** [USA National Institute of Health](#)
Herr HM. (PI), Moerman KM. (Key Person), *Computational Design, Fabrication, and Evaluation of Optimized Patient-Specific Transtibial Prosthetic Sockets*
- 2013 **Research grant: €710,500 (STW 12398)** [Netherlands Organisation for Scientific Research](#)
Oomens C. (PI), Nederveen A. (PI), Moerman KM. (Key person), *Early diagnosis and prevention of pressure related deep tissue injury*
- 2010 **Award: €1000 Engineers Ireland Biomedical Research Medal** [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 **Award: Bioengineering in Ireland Bronze Medal** [Royal Academy of Medicine Ireland](#)
1st best paper at the 15th Bioengineering in Ireland Conference, Paper: *A validation method for motion tracking techniques based on tagged MRI.*
- 2005 **Award: €1000 Bachelor Thesis Prize** [The Royal Netherlands Society of Engineers, KIVI](#)
The 3rd prize for best Dutch bachelor thesis. Thesis: *The Design and Development of Autonomous Solar Powered, Mobile Concentrate Feeding Robot for the Australian Dairy Industry.*
- 2004 **Scholarship €7000** [VSBfonds](#)
VSBfonds scholarship for education outside the Netherlands. Awarded to a single short-listed candidate per university

Selected publications

[Full publication list](#)

- Moerman KM et al.. **Automated and Data-driven Computational Design of Patient-Specific Biomechanical Interfaces** *Open Sci. Framew. PREPRINT*
- Solav D, Moerman KM, Jaeger AM, Genovese K, Herr HM. **MultiDIC: An Open-Source Toolbox for Multi-View 3D Digital Image Correlation** *IEEE Access* 2018;6:30520-30535.
- Moerman, KM. **GIBBON: The Geometry and Image-Based Bioengineering add-On.** *Journal of Open Source Software.* 2018;22:506.
- Moerman, KM et al.. **On the importance of 3D, geometrically accurate, and subject-specific finite element analysis for evaluation of in-vivo soft tissue loads.** *Comput. Methods Biomech. Biomed. Engin.* 2017;20:483-491.
- Moerman, KM et al.. **Control of tension-compression asymmetry in Ogden hyperelasticity with application to soft tissue modelling** *J Mech Behav Biomed Mater.* 2016;56:218-28.
- Nagel, T, Görke, UJ, Moerman, KM, Kolditz, O. **On advantages of the Kelvin mapping in finite element implementations of deformation processes** *Environ. Earth Sciences* 2016;75:937-937

Conference and editorial board experience

- 2019 **Organizer/chair for special sessions** [Comp. Methods in Biomech. and Biomed. Eng. 2019](#)
- 2018 **Organizer/chair for special session and workshop** [World Congress of Biomechanics 2018](#)
- April 2017-Now **Section Editor** [The Journal of Open Hardware](#)
- June 2016-Now **Co-founder, steering committee member** [EngrXiv: The Engineering Archive](#)
- March 2016-Now **Editor** [The Journal of Open-Engineering](#)
- Feb 2016-Now **Co-founder, editor** [The Journal of Open-Source Software](#)
- 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

- 2018-Now **Open Science MOOC content and website developer** [Open Science MOOC](#)
- 2018-Now **Volunteer Youth Judo instructor** [Galway, Ireland](#)
- 2008-2009 **Vice-Captain, Ju-Jutsu Instructor** [Dublin University Judo Club](#)
- 2007-2009 **Travel Officer** [Dublin University Photography Association](#)