

# Daniel Renjewski

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CONTACT INFORMATION	Biorobotics Laboratory École polytechnique fédérale de Lausanne EPFL STI IBI BIOROB INN 239, Station 14 1015 Lausanne, VD Switzerland	Voice: +41 (021) 693 13 67 daniel.renjewski@epfl.ch
CITIZENSHIP	Germany	
RESEARCH INTERESTS	Fundamental dynamic principles of bipedal locomotion, Neuromuscular control of bipedal gait, Bio-inspired mechanism design, Lower limb exoskeletons and prosthesis, Legged robots, Numerical modeling, Experimental and technical biomechanics	
EDUCATION	<b>Technische Universität Ilmenau</b> , Ilmenau, Germany Doctorate (Dr.-Ing.), (graduation date: July 2012) <ul style="list-style-type: none"><li>• Thesis: An engineering contribution to human gait biomechanics</li><li>• Advisor: <b>Professor Hartmut Witte</b></li><li>• Area of Study: Biomechatronics</li></ul> Diploma (Dipl.-Ing.), Biomechatronics (graduation date: November 2007) <ul style="list-style-type: none"><li>• Thesis: Design of a biologically inspired echoperception system</li><li>• Advisor: <b>Professor Hartmut Witte</b></li><li>• Area of Study: Biomechatronics</li></ul> GoEast fellowship, Novocheerkassk Polytechnic Institute, Russia (9/2005-12/2005) <ul style="list-style-type: none"><li>• Project Topic: Model development for a planar, 3 DoF actuator</li><li>• Area of Study: Mechatronics</li></ul>	
ACADEMIC EXPERIENCE	<b>École Polytechnique Fédérale de Lausanne</b> , Switzerland <b>04/2014 to present</b> <i>PostDoc</i> Biorobotics Laboratory Research topic: Symbiotic man-machine interactions in wearable exoskeletons to enhance mobility for paraplegics <b>Oregon State University</b> , USA <b>04/2012 to 03/2014</b> <i>PostDoc</i> Dynamic Robotics Laboratory Research topic: Biologically inspired bipedal locomotion <b>Technische Universität Darmstadt</b> , Germany <b>10/2011 to 01/2012</b> <i>PhD Student</i> Department of Sports Biomechanics	

Research topic: Biologically inspired bipedal locomotion

**Friedrich-Schiller-Universität**, Jena, Germany **02/2008 to 09/2011**  
*PhD Student* Laufflabor Locomotion Laboratory

Research topic: Biologically inspired bipedal locomotion

**Technische Universität Ilmenau**, Germany **09/2003 to 06/2006**  
*Undergraduate Research Assistant*

- Project thesis “Design of an experimental setup for electromagnetical separation” (09/2003 to 06/2004)
- Seminar paper “Model development for a planar, 3 DoF actuator” (09/2005 to 06/2006)

SUPERVISED  
THESES

Lutz Kunze. Electromechanical simulation and power evaluation of the bipedal robot RunBot with an elastic ankle joint, diploma thesis (in German), University of Applied Sciences Jena, 2010

Robert Schirmer. Optimisation of a bipedal walking machine using a multi-body model, bachelor thesis (in German), University of Applied Sciences Jena, 2011

PROFESSIONAL  
EXPERIENCE

**Evologics**, Berlin, Germany

*R&D intern for hardware and electronics development* **10/2006 to 02/2007**

TECHNICAL  
SKILLS

Extensive hardware and software experience in testbed and robot design

**MATLAB** experience: linear algebra, stability analysis, nonlinear numerical methods, visualisation, state machines, symbolic computation, Simulink, SimScape

Instrumentation and Control: **Simulink Realtime Windows Target**, **LabVIEW**, **ROS**

Computer Aided Design: **Autodesk Inventor**, **SolidWorks**, **CADsoft Eagle**, **DesignSpark PCB**

Optimisation: cluster computing using Unix (Sun Grid Engine, Torque/PBS)

Programming: C, Pascal, BASIC

Applications: **L<sup>A</sup>T<sub>E</sub>X**, Microsoft Office, OpenOffice, GIMP

LANGUAGE  
SKILLS

English: fluent, German: native speaker, Russian: intermediate

JOURNAL  
PUBLICATIONS

Aleksandra V. Birn-Jeffery, Christian M. Hubicki, Yvonne Blum, **Daniel Renjewski**, Jonathan W. Hurst, Monica A. Daley; *Running birds prioritize injury avoidance and economy over stability*; Journal of Experimental Biology, 217 (21), 3786–3796 (2014)

Susanne Lipfert, Michael Günther, **Daniel Renjewski**, André Seyfarth; *Impulsive ankle push-off powers leg swing in human walking*; The Journal of Experimental Biology, 217, pp. 1218-1228 (2014)

**Daniel Renjewski**, André Seyfarth; *Robots in human biomechanics - study on ankle push-off in walking*; Bioinspiration and Biomimetics, 7, 036005 (2012)

Susanne Lipfert, Michael Günther, **Daniel Renjewski**, Sten Grimmer, André Seyfarth; *A model-experiment comparison of system dynamics for human walking and running*; The Journal of Theoretical Biology, 292, 11-17 (2012)

JOURNAL  
PUBLICATIONS IN  
REVIEW

Christian Hubicki, Jesse Grimes, Mikhail Jones, **Daniel Renjewski**, Alexander Spöwitz, Jonathan Hurst; *ATRIAS: Enabling Agile Biped Locomotion with a Template-Driven Approach to Robot Design*; International Journal of Robotics Research

**Daniel Renjewski**, Alexander Spöwitz, Andrew Peekema, Mikhail Jones, Jonathan Hurst; *Exciting template dynamics in a versatile bipedal robot*; IEEE Transactions on Robotics

CONFERENCE  
PUBLICATIONS

Peekema A., **Renjewski D.**, Hurst J. *Open-source real-time robot operation and control system for highly dynamic, modular machines*, Proc. of the ASME International Conference on Multibody Systems, Nonlinear Dynamics, and Control, August 4-7, Portland, USA, (2013).

**Renjewski D.**, Seyfarth A. *How come a moving biped does not fall - the challenge to apply theoretical stability concepts*, US National Congress of Theoretical and Applied Mechanics, June 27-July 02, State College, USA, (2010).

**Renjewski D.**, Seyfarth A., Manoonpong P., Wörgötter F. *The development of a biomechanical leg system and its neural control*, 2009 IEEE International Conference on Robotics and Biomimetics, Dec 18-22, Guilin, China, (2009).

**Renjewski D**, Seyfarth A, Manoonpong P, Wörgötter F. *From Biomechanical Concepts Towards Fast And Robust Robots*, Advances in Mobile Robotics: Proc. of 11th CLAWAR, Marques L, Almeida A, Tokhi MO, Virk GS (Eds.), World Scientific: 630-637, (2008)