

Simon Wilshin 11th May 1983

swilshin@gmail.com • +44 7549878633 • entrainment.info
8 Boleyn Close • Leigh-on-Sea • Essex • SS9 5AY • UK

Summary

My doctoral training is in theoretical physics, and I have worked for five years as a biologist.

My current focus is in integrative biomechanics using genetic tools, where I act as a bridge between experiment, theory and synthesis. I focus on gait transitions, that is the motion of animals during the periods between stable gaits.

This work leans heavily on a dynamical systems approach. It includes applications of differential geometry, practical work with robotic systems, and extensive programming. I have written simulations of legged systems, worked with computer assisted algebra packages and designed and built tracking systems.

Experience

The Royal Veterinary College

London, UK

Postdoctoral Researcher in Biomechanics

2013–2016

Experimental and theoretical studies of genetically engineered mice with an emphasis on neuromechanics and optogenetics. Application of biological principles to bioinspired robots.

Supervisors: Andrew Spence, Dominic Wells

Postdoctoral Researcher in Biomechanics

2011–2013

Experimental and theoretical studies of dog and bird locomotion. Application of biological principles to bioinspired robots.

Supervisors: Monica Daley, Andrew Spence

Postdoctoral Researcher in Behavioural Ecology

2010–2011

Mathematical modelling of painted dog behaviour.

Supervisor: Alan Wilson

Research Placement

2013–Present

Experimental study of cockroach locomotion on compliant surfaces using electrophysiology and motion capture. Modelling and analysis of resulting experimental data.

Supervisor: Andrew Spence

University of Oxford

Oxford, UK

Various roles while in education

2004 – 2010

Instructing students in programming in C and practical work. Taught classes and tutorials on Covariant Electromagnetism, Statistical Mechanics, Thermodynamics and Kinetic Theory, Classical Mechanics and Theoretical Physics. Researched the use of frequency scanning interferometry in multilateration systems.

Supervisor: Various, available on request

Education

University of Oxford

Oxford, UK

Doctor of Philosophy

2005 – 2011

Title: Identifiable branes and their realisation in toy models of string theory.

Supervisor: John Wheeler

Undergraduate Masters in Physics, 1st

2001 – 2005

Options in complex analysis and classical mechanics, theoretical and particle physics.

Skills

Abstract and Technical

Mathematics

As a result of my degrees and ongoing studies and research I have a good command of both abstract and practical mathematics. I am proficient in the study of dynamical systems, differential geometry, optimisation, interpolation, phase extraction and machine learning.

I have expertise in statistical analysis including generalized linear models and mixed effects models.

Experimental Techniques

During the course of my research I have been trained in the use of motion capture systems, fluoroscopy, inertial measurement systems, high speed cameras, and robotic systems. I have experience in precision interferometry including laser interferometry. I have worked with optogenetic systems. I am looking for opportunities to learn new techniques for quantifying animal and physical systems.

Programming

Proficient in various programming languages including C++, Python and R. Familiar with multiple other languages including C, Haskell, FORTRAN, MATLAB, Java, and Maple. Examples of software I have authored can be found on [github](#)

Personal

Software Development

Distinct from my familiarity with a variety of programming language I am also interested in the more abstract problems of software design and co-ordinating diverse programming teams. I've worked as part of a small team developing academic software. I have released code produced through this process which shows an emphasis on good documentation and clear, consistent coding standards. I believe good code quality is a reflection and promoter of good communication between team members. I have some exposure to software design paradigms and design patterns, including the basics of object orientated design and UML.

Pedagogy

I have an ongoing interest in education, teaching and related research. I co-managed the pedagogy journal club in the Structure and Motion Lab. My responsibilities here included selecting research from the literature and chairing discussions on how cutting edge research could be used to improve students and faculties performance as educators.

Communication

I have given many talks explaining my research and have some experience as a public speaker. My talks focus on a singular, simple and clear message. When presenting I aim for for maximum information density without clutter. I want my talks to be both memorable and informative and have an informal style which makes use of humour while maintaining technical precision.

Interests

Creative

My interest in musical composition has taught me a great deal about the nature of beauty, even if at times that is not reflected in my musical endeavours (my work can be found on [soundcloud](#)). I also have an interest in ray tracing and computer generated images and animation, and video game design. I have a passion for history and philosophy (particularly epistemology within the analytic tradition), .

Social and Physical

My communication and leadership skills have been refined by roles commentating and captaining teams in competitive video games. I value time to think surrounded by natural beauty, my vacations are therefore typically spent up a hill or along a river or lake.

Languages: English (native speaker), German (beginner).