

Simon Wilshin 11th May 1983

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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

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

I have a good command of 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. 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 laser interferometry. I have worked with optogenetic systems. I am proficient in C++, Python and R and familiar with other languages including C, Haskell, FORTRAN, MATLAB, Java, and Maple. I co-managed a pedagogy journal club. I have experience in public speaking presenting my research.

Examples of software I have authored can be found on [github](#)

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

Interests

I am interested in musical composition (my work can be found on [soundcloud](#)). I also have an interest in history, philosophy (particularly epistemology within the analytic tradition), video games, ray tracing, computer generated animation, and computer generated images.