Spencer Wilson

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EDUCATION

Class of 2017 — Imperial College London
Master of Science with Distinction, Department of Mathematics
Controllability of Random Geometric Graphs

Class of 2016 — Magdalene College, University of Cambridge
Master of Philosophy with Distinction, Department of Engineering
Kirigami Sheets: Engineering Objects with Holes

Class of 2015 — Massachusetts Institute of Technology
B.S. Department of Mechanical Engineering
Minor in Comparative Media Studies
GPA: 5.0/5.0

EXPERIENCE

2017-2018 Research Assistant, Sainsbury Wellcome Center *London, UK*

Working in the Mrsic-Flogel group applying concepts from nonlinear control theory and complex networks to better understand how macroscopic brain dynamics can be altered by microscopic inputs in experiment, by environmental stimuli, and by modules in the brain itself. Analyzing data from generative models and experimental imaging.

2015-2016 Supervisor, Gonville & Caius College *Cambridge, UK*

Supervised 18 first-year engineering students in Structural Mechanics in place of a Professor on sabbatical. Met with two or three students per session where problems were explained alongside examples. Wrote reports each term on each student's progress and provided exam strategy.

2013-2015 Researcher, Center for Bits and Atoms, *MIT*

Designed, prototyped, iterated a novel manufacturing process for composite digital materials. Spearheaded development of an automation workflow for parallel filament winding composite parts by retrofitting a desktop milling machine.

January 2015 Field Engineer, GoGrit *Pithampur, India*

Partnered with an MIT startup and the MIT Public Service Center to prototype a folding off-road wheelchair. Conducted on-site manufacturing consulting.

Summer 2013 Researcher, Otherlab *San Francisco, CA*

Authored a workflow for a bicycle fabrication technology project. Prototyped a method to fuse polyethylene tubing as part of a project to provide nested natural gas tanks for alternative energy automotive applications.

Summer 2012 Intern, WiTricity *Watertown, MA*

Fabricated a 2-axis CNC table for testing wireless power transfer technology. Designed and fabricated a stand to accompany a consumer product.

2011-2012 Researcher, Laboratory for Manufacturing and Productivity, *MIT*

Designed an dynamic impedance test environment for PDMS wafers for microfluidics applications. Fabricated a microfluidic chip embosser. Fabricated a roll-to-roll microprinter for high-speed silicon wafer manufacturing.

HONORS

Academic 2015 Marshall Scholarship

One of 32 students in the United States selected for two years of study at two UK universities of their choice. In commemoration of the Marshall Plan and the enduring US-UK Special Relationship.

Leadership 2015 Engineering Student Advisory Committee

One of 12 MIT students chosen to represent the mechanical engineering student body in meetings with MIT faculty.

Humanities 2014 Burchard Scholarship

One of 30 MIT students chosen to receive the highest academic honor in the MIT Humanities Department.

PUBLICATIONS

Journal Article Curvature Constraints in Kirigami Sheets

(In Preparation) Discusses the limits of designing morphing surfaces using folds and cuts, also known as kirigami. Presents a novel kirigami tessellation and its structural properties.

Conference Paper Byron's Entropy: The Chaos of Hard Clay

International Association of Byron Scholars: "Byron, Time and Space". Yerevan, Armenia July 2017. Discussed Byron's connection to early statistical mechanics with poesis as a type of theory generation. Stressed the fecundity of collaboration between scientific and poetic thinking embodied by Lord Byron.

Conference Paper Engineering Kirigami Sheets

IASS Conference Tokyo, Japan September 2016. Discusses the theory, design and analysis of kirigami in an engineering setting towards the development of shape-changing surfaces.

Journal Article Macrofabrication with Digital Materials: Robotic Assembly

Architectural Design, September 2015. Explores the implications of the use of digital materials, reversibly assembled from a discrete set of parts with a discrete set of relative positions and orientations, for applications on scales ranging from aerostructures to geoprinting.

MIT Thesis Internal Wave Generation via Finite Cylinder Oscillation

Explored nonlinear internal wave dynamics of a stratified fluid through particle image velocimetry (PIV) for applications to ocean dynamics. Designed and conducted wave-tank experiments and data analysis.

U.S. Patent Ganged Resin Transfer Molding for Filament Wound Parts

Invented alongside Samuel Calisch and Professor Neil Gershenfeld. Claims a technique for high-throughput digital material production. This technology is currently being adapted to allow the manufacture and assembly of large lattices for applications across length scales.

PROJECTS

2007 - Current Automotive Restoration

Restored a 1967 Volkswagen Microbus beginning at age 13. This included engine replacement and rebuilding, bodywork and painting, electrical installation, and altered suspension.

2014 - Current Documentary

Crafting an interactive website to explore manufacturing in Northern India. Project ongoing.

SKILLS

Fabrication	3D printing, waterjet, lasercutting, milling, turning, carpentry, fiber composite layup, MIG and TIG welding
Software	SolidWorks, MasterCAM, PartWorks, MATLAB, Rhinoceros, Grasshopper, Final Cut Pro X, Python, HTML, CSS

INTERESTS

Sport	Long distance road cycling and cycle touring. Trail running and hiking. Indoor and outdoor rope climbing and bouldering, peak rating V5/5.11d.
Literature	Reading literature and poetry. Writing poetry and short stories.
Photography	Digital photography and digital filmmaking. Making and screening digital short films.
Community	Created the Samuel Pepys Coffee Society at Magdalene College to roast fresh coffee for MCR members. Officer at a self-governed dormitory, MIT Senior House. Served as assistant house manager in a cooperative MIT independent living group, Pika.