James Goodman, Ph.D.

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Education

The University of Chicago — **Chicago, IL**
Ph.D. in Computational Neuroscience — *2013–2018*

Drexel University — **Philadelphia, PA**
B.S. / M.S. in Biomedical Engineering — *2008–2013*

Work Experience

German Primate Center — **Neurobiology Lab**
Post-Doctoral Scientist — *2019–Present*
Brain-computer interfaces and mental simulation of movement
Member of the international B-CRATOS consortium

- Plan and deploy experimental solutions combining electrophysiology, motion capture, a robotic hand, and XR
- Develop ETL and distributed computing pipelines for experimental data analysis
- Prepare and give presentations of research to experts, general audiences, and funding stakeholders
- Work with a team to develop scientific communication strategies for the lab
- Mentor and manage students in completion of their projects
- Read and give presentations on current scientific literature
- Write papers for major scientific publications

The University of Chicago — **Somatosensory Neuroscience and Neuroprosthetics Lab**
Graduate Student, Post-Doctoral Scientist — *2013–2018,2019*
Representations of hand postures in the brain
Perception of touch and proprioception

- Planned and deployed experimental solutions combining electrophysiology, motion capture, and an industrial robot
- Developed ETL and distributed computing pipelines for experimental data
- Prepared and gave presentations of research to experts, general audiences, and funding stakeholders
- Worked with a team to develop an experimental strategy suitable for student and PI stakeholders with disparate goals
- Managed teams of students processing kinematic data and performing perceptual research studies
- Read and give presentations on current scientific literature
- Write papers for major scientific publications

Drexel University — **Neurorobotics Lab**
Undergraduate Researcher — *2009–2013*

- Carried out electrophysiology experiments
- Established a pipeline for processing optical motion capture data
- Prepared materials for grant applications
- Planned experimental design and strategy with lab team members

Grants and Awards

2015: Graduate Assistance in Areas of National Need (GAANN) Fellowship in Integrative Neuromechanics

Professional Development

2021: Neuromatch Deep Learning Summer School, Student

Teaching

The University of Chicago — **Course: Signal Analysis for Neuroscientists**
Teaching Assistant — *2016*

- Taught signal processing to students in a Ph.D. level course
- Prepared and delivered presentations for lessons and reviews of homework assignments
- Prepared rubrics and carried out grading of code, assignments, and exams

The University of Chicago — **Course: Methods in Computational Neuroscience**
Teaching Assistant — *2015*

- Taught a wide variety of computational analysis topics to students in a Ph.D. level course
- Prepared and delivered presentations for lessons and reviews of homework assignments
- Prepared rubrics and carried out grading of code, assignments, and exams

Drexel University — **Course series: Computation Lab I-III**
Teaching Assistant — *2009–2013*

- Provided guidance to engineering students learning coding and scientific computing in Maple
- Reported to team meetings to discuss lesson plans and contingencies

Mentorship

Neuromatch Academy — **Computational Neuroscience Summer School**
Mentor — *2021*

- Curated literature for team members
- Provided consultation on analysis project
- Established target deliverables of project
- Determined a plan for delegation of tasks suiting team members' experience and desired outcomes

Illinois Mathematics and Science Academy (IMSA) — **Student Inquiry and Research (SIR) program**
Mentor — *2015–2016*

- Developed a learning plan and data analysis project for a high school student
- Provided consultation on documents and presentations submitted as deliverables for the program

Skills

Fields

- Computational Neuroscience
- Sensation, Perception, and Psychophysics
- Musculoskeletal Anatomy and Physiology
- Statistics
- Classification and Regression Models
- Deep Learning & Neural Networks
- Biomedical Engineering
- Biomechanics
- Motion capture (Optical and Non-optical)
- Signal Processing
- Dynamical Systems and Control Theory
- Algorithms

Computing Languages and Frameworks

- MATLAB
- C++: MuJoCo, OpenGL
- HPC: Slurm, batch scripting
- Python: PyTorch, TensorFlow, many other frameworks
- R: blogdown
- LabVIEW

Other Software Tools

- OpenSim
- Photoshop
- Premiere
- OBS
- GitHub Desktop
- Illustrator
- InDesign
- LaTeX

Devices and Systems

- Vicon Optical Marker Tracking System
- Azzurra Robotic Hand
- Blackrock Electrophysiology Systems
- NDI WAVE Magnetic Marker Tracking System
- Mitsubishi RV-1A Industrial Robotic Arm
- Various motors and sensors

Human Languages

English: Native proficiency

German: Roughly B2 proficiency