Sam Cooler

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Engineer and neuroscientist seeking a fast-paced team environment working on complex hardware-software system design, data analysis, and innovative problem-solving

Professional Experience

- **Neuroscientist, Dept. of Neurosurgery, Stanford University, 2021-current**
  - Developed models of retinal visual signal encoding using neural networks and new experiments, creating the first high resolution model of human retina and a state-of-the-art model for macaque
  - Analyzed neural variability among cell types across hundreds of subjects and experiments
  - Created a software platform to scale neural analysis from 1000 to over 100,000 neurons
  - Designed and created a GUI for the data platform, enabling research for less-technical scientists
  - Developed software for new retinal interface chip including diagnostics and calibration procedures
- **Graduate Researcher, Dept. of Ophthalmology, Northwestern University, 2014-2021**
  - Identified and investigated a new connection between two retinal ganglion cell types using dual-cell patch-clamp methods; published findings in Nature Neuroscience
  - Discovered a reward signal in the primate motor cortex using functional modeling of MEA data
  - Designed, built, and calibrated new in-vitro experiment rigs and computer infrastructure
- **Modem System Test Engineer, Qualcomm Inc., 2013-2014**
  - Conducted wireless network failure profiling using custom simulation software, collaborating with developers to improve data connectivity and automated emergency calling features.
  - Developed and led implementation of a new internal failure analysis software platform, significantly enhancing device log processing efficiency by streamlining workflow.
- **Graduate Researcher, Dept. of Electrical & Computer Engineering, Ohio State Univ., 2010-2012**
  - Designed distributed wireless medium access protocols using software-defined radios and network simulation, increasing data transmission rates by 80%
- **Lead Artist and Creative Engineer of Large-Scale Interactive Sculptural Installations**
  - Designed and implemented complex systems involving electronics, firmware, software, interactivity, sensors, motors, and physical structure, with deep knowledge of complete systems
  - Presented large-scale works w/ provided grant funding at major national and regional art events

Education

- Postdoctoral Fellowship, Dept. of Neurosurgery, Stanford University, 2021-current
- Ph.D. Neuroscience, Dept. of Ophthalmology, Northwestern University, 2014-2021
- B.S., M.S. Electrical and Computer Engineering, The Ohio State University, 2006-2012

Skills

- Software & Machine Learning: Python, Numpy, Pandas, Scipy, PyTorch, Jupyter, MATLAB, etc
- Systems: Communications, signal processing, protocols, microcontrollers, sensors, and interfacing
- Scientific experiments: neural stimulation and recording, multi-electrode array and patch-clamp methods, microscopy, in-vitro techniques, experimental design, figure creation
- Design and fabrication: 3D CAD, CNC cutting, welding, metal finishing, 3D printing