JORDAN **MATELSKY**

501 SAINT PAUL STREET • #1503 • BALTIMORE MD 21202

jordan@matelsky.com • 973-903-9945

EDUCATION

JOHNS HOPKINS UNIVERSITY

Neuroscience (BSci) 2016

EXPERIENCE

2016– **Johns Hopkins University Applied Physics Laboratory**

COMPUTATIONAL NEUROSCIENTIST; PROJECT MANAGER

Projects include BRAIN Initiative brain-mapping efforts such as IARPA MICrONS; NIH-funded work on BossDB — a spatial database — and cloud-native big-data biological analyses; as well as internal machine-learning, connectome analysis, and general data-science and machine-learning work. Led and co-authored research grants for internal as well as federal funding. Responsible for software engineering teams and production-ready software in use by the neuroscience community.

2014– **FitMango**

CHIEF TECHNOLOGY OFFICER & CO-FOUNDER

We founded FitMango to make personal health and fitness training affordable and meaningful to the general public. FitMango pairs users with personal trainers who can help them reach their fitness goals, and tracks health data to improve workout and diet regimens. FitMango is venture-backed, and currently in use at personal-training centers on the east coast of the United States.

2013 **InstaEDU (now Chegg)**

SOFTWARE ENGINEER INTERN

Designed software on the InstaEDU platform, a web-app to connect students with appropriate tutors. Developed both front- and back-end software on the Django framework.

RESEARCH

2015–'16 **Dr. Joshua Vogelstein — NeuroData**

Developed software infrastructure to aid in understanding the complex connectivity of the brain. My primary contribution to the world of open-data neuroscience was ndio, a comprehensive Python library that manipulates, stores, and interacts with large-scale neurodata. The ndio codebase spans thousands of lines of tested, cross-platform code, currently in active use by neuroscientists both inside and outside of the Johns Hopkins NeuroData community.

2014 **Dr. Joel Bader**

Code and research contributor on the Synthetic Yeast (Sc2.0) project. Primary projects included developing secure lab-bench digital notebooks for designing and implementing synthetic-biology protocols.

2013 **Dr. Gislin Dagnelie**

Architected digital-diagnostics system to collect patient- and hardware-data after implantation with a retinal prosthesis.

PUBLICATIONS & PRESENTATIONS

June 8, 2020 **Connectome subgraph isomorphisms and graph queries with DotMotif**

✴ **JORDAN K. MATELSKY**, Elizabeth P. Reilly, Erik C. Johnson, Brock A. Wester, William Gray-Roncal

bioRxiv Pre-Print.

September 29, 2020 **Leveraging Tools from Autonomous Navigation for Rapid, Robust Neuron Connectivity**

Nathan Drenkow, Justin Joyce, ✴ **JORDAN MATELSKY**, Jennifer Heiko, Reem Larabi, Brock Wester, Dean Kleissas, William Gray-Roncal

MICCAI 2020

May 15, 2020 **intern: Integrated Toolkit for Extensible and Reproducible Neuroscience**

✴ **JORDAN K MATELSKY**, Luis Rodriguez, Daniel Xenes, Timothy Gion, Robert Hider Jr., Brock Wester, William Gray-Roncal

bioRxiv Pre-Print.

Feb 10, 2020 **A substrate for modular, extensible data-visualization**

✴ **JORDAN K. MATELSKY**, Joseph Downs, Hannah P. Cowley, Brock Wester & William Gray-Roncal

Big Data Analytics

Oct 25, 2019 **The Block Object Storage Service (bossDB): A Cloud-Native Approach for Petascale Neuroscience Discovery**

Robert Hider Jr., Dean M. Kleissas, Derek Pryor, Timothy Gion, Luis Rodriguez, ✴ **JORDAN MATELSKY**, William Gray-Roncal, Brock Wester

bioRxiv

Feb 28 2019 **Machines Thinking**

Talk. We explore potential computational implementations of the biological brain, and examine what this can teach us about improving our artificial neural networks. *Johns Hopkins University HopAI*

November 2018

A community-developed open-source computational ecosystem for big neuro data

Joshua T Vogelstein, Eric Perlman, Benjamin Falk, Alex Baden, William Gray Roncal, Vikram Chandrashekhar, Forrest Collman, Sharmishtaa Seshamani, Jesse L Patsolic, Kunal Lillaney, Michael Kazhdan, Robert Hider, Derek Pryor, ✳ **Jordan Matelsky**, Timothy Gion, Priya Manavalan, Brock Wester, Mark Chevillet, Eric T Trautman, Khaled Khairy, Eric Bridgeford, Dean M Kleissas, Daniel J Tward, Ailey K Crow, Brian Hsueh, Matthew A Wright, Michael I Miller, Stephen J Smith, R Jacob Vogelstein, Karl Deisseroth, Randal Burns

We discuss the present and future of petabyte-scale neuroscience and connectomics. *Nature Methods*

May 8 2018

Container-Based Clinical Solutions for Portable and Reproducible Image Analysis

✳ **Jordan Matelsky**, Gregory Kiar, Erik Johnson, Corban Rivera, Michael Toma, William Gray-Roncal

This paper reviews reasons why containers are an ideal strategy for tool-deployment in a clinical setting. *Journal of Digital Imaging*

2017

A Large Deformation Diffeomorphic Approach to Registration of CLARITY Images via Mutual Information

Kwame S Kutten, Nicolas Charon, Michael I Miller, J Tilak Ratnanather, ✳ **Jordan Matelsky**, Alexander D Baden, Kunal Lillaney, Karl Deisseroth, Li Ye, Joshua T Vogelstein

International Conference on Medical Image Computing and Computer-Assisted Intervention

Apr 13 2017

I Have an Idea... Now What?

A talk on balancing entrepreneurial energy and startup fundraising with school, life, and sleep. *Talk. TCO Labs, Baltimore MD.*

Nov 2017

Cloud-Native Infrastructure and Accessible Interfaces to Enable Peta-Scale Neuroscience

Examples and technical review of neuroscience research and infrastructure technologies developed at the Applied Physics Laboratory. *Poster Presentation. Society for Neuroscience 2017, Washington DC.*

Apr 4 2017

Scalable Big Data Infrastructure to Enable Peta-Scale Neuroscience

A high-level overview of peta-scale neuroscience technologies, including bossDB, intern, and substrate. *Poster Presentation. Max Planck / Howard Hughes Connectomics Meeting 2017, Berlin.*

Nov 13 2016

ndio: Scalable Neuroscience Data IO

A summary of ndio, a Python framework developed to enable easy and accessible manipulation of big-data neuroscience to the research community. *Society for Neuroscience 2016.*

Nov 10 2015

(TEDx) Prelude to Piano Concerto: Entrepreneurship on Campus

I had the tremendous honor of being invited to give a TEDx talk on the state of entrepreneurship at universities. An online recording will be available in the near future.

2015

The Blender 3D Cookbook — Enrico Valenza

EDITOR

This book covers the basics of 3D character modelling in the open-source Blender 3D software suite.

Mar 27 2015 **Low-Cost Tocodynamometry and Fetal Heart-Rate Monitor**

An overview of a low-cost, smartphone-based tocodynamometer-toco-transducer and fetal heart-rate monitor for use in regions of low healthcare accessibility. *The Biomedical Engineering Society Undergraduate Research Conference, Johns Hopkins University, March 2015.*

Dec 2014 **What is a Neuroscientist?**

Interactive demonstration and presentation of neuroscience technology and common cognitive tests to excite middle-school students about neurological and psychological sciences. *Mount Olive Middle School, Mount Olive, NJ*

Apr 15 2014 **Data-validation improvements in retinal prosthesis testing**

Multimedia Presentation. Presented at the Johns Hopkins University Undergraduate Research Symposium. *Johns Hopkins University*

FURTHER PUBLICATIONS & AUTHORSHIP

Nov 2020 **Project Minard: A Platform for War-Rooming and Geospatial Analysis in Virtual Space**

Stephen A. Bailey, Justin R. Renga, Joseph T. Downs, Miller L. Wilt, Brock A. Wester, ✹ **JORDAN K. MATELSKY**

Johns Hopkins University Applied Physics Laboratory Technical Digest

Apr 2020 **Feature engineering with clinical expert knowledge: A case study assessment of machine learning model complexity and performance**

Kenneth D. Roe, Vibhu Jawa, Xiaohan Zhang, Christopher G. Chute, Jeremy A. Epstein, ✹ **JORDAN MATELSKY**, Ilya Shpitser, Casey Overby Taylor

PLOS ONE

Oct 2019 **DotMotif: Subgraph isomorphisms on large brain graphs**

✹ **JORDAN MATELSKY**, Erik Johnson, Elizabeth Reilly, William Gray Roncal

Poster Presentation. Society for Neuroscience 2019, Chicago

Apr 2018 **Toward a framework for processing large neuroscience datasets**

William Gray Roncal, Erik Johnson, Corban Rivera, Joseph Downs, ✹ **JORDAN MATELSKY**, Caitlyn Bishop, Miller Wilt, Nathan Drenkwo, Raphael Norman-Tenazas, Eva Dyer, Konrad Kording, Brock Wester

Poster Presentation. BRAIN Initiative Investigators Meeting, Washington DC

Nov 2017 **CONFIRMS: Creating Optimized Networks for Informing Reconstruction Metrics and Science**

Gray Roncal et al

Poster Presentation. Society for Neuroscience 2017, Washington DC

Nov 11
2015
Python in Big-Data Neuroscience

A summary of work in bringing parallelizable, intuitive, open-source software to the world of data-driven petascale neuroscience. *Multimedia Presentation. Johns Hopkins University.*

PROJECTS

Reading for Gender Bias

We produce a suite of editorial tools which writers may use to detect gender bias in their writing (with a focus on academic letters of recommendation).

2016–'17 **DonateMates**

Public charitable donation-matching made easy. Serverless web application to simplify the process of record-keeping when matching charitable donations.

MEMBERSHIPS & ACTIVITIES

2014– **Society for Neuroscience (SfN)**

2015–'16 **The American Institute of Chemical Engineers (AIChE)**

2014–'16 **NPΨ: The Johns Hopkins University Neuroscience Honors Society**

BOARD MEMBER
Chair for a volunteer community outreach program that brought neuroscience education in an entertaining, enriching format to children in Baltimore City.

2013–'16 **HopHacks**

ORGANIZER
Produced bi-annual, three-day hackathon events for students at Johns Hopkins University as well as the surrounding areas.

2013–'16 **Engineering World Health**

EXECUTIVE
Handled all grants and funding proposals for several teams of undergraduate engineers. Spearheaded the design of a low-cost tocodynanometer to improve childbirth in developing countries. Recipient of the 2014 Johns Hopkins University Student Initiatives Fund.

2012–'16 **Neuroscience Journalism Club**

PRESIDENT
Led undergraduate meetings tailored to discuss recent, notable discoveries in the neuroscience world. Assisted in general understanding of complex biomedical language.

2013–'14 **Sustainable Hopkins Infrastructure Program (SHIP)**

Researched and pitched large-scale projects to university administration in order to improve environmental-friendliness and spread green-awareness on campus.