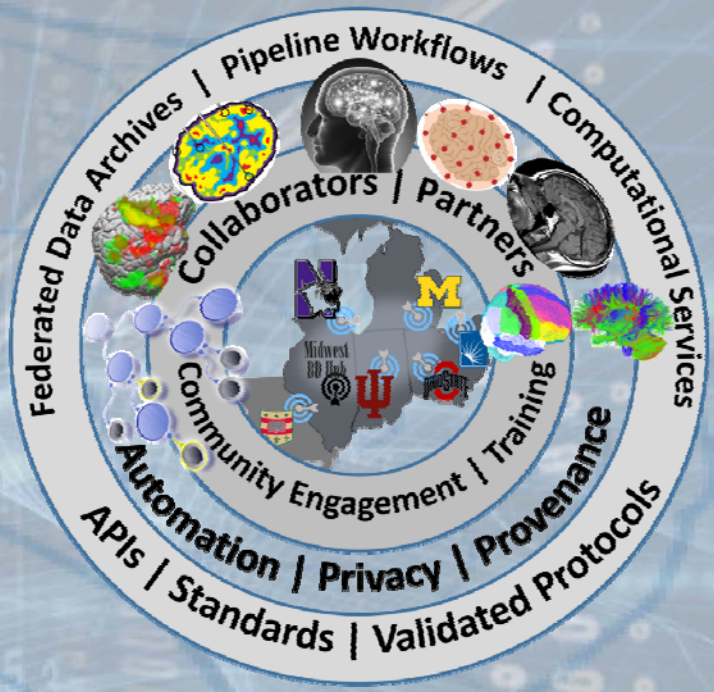
Midwest Workshop on Big Neuroscience Data, Tools, Protocols & Services



Computational Neuroscience Network (ACNN)

http://www.NeuroscienceNetwork.org/ACNN_Workshop_2016.html

Workshop Overview

Ivo D Dinov

Statistics Online Computational Resource (SOCR)
Michigan Institute for Data Science (MIDAS)
University of Michigan
http://www.umich.edu/~dinov

SCHOOL OF NURSING
STATISTICS ONLINE
COMPUTATIONAL RESOURCE (SOCR)
UNIVERSITY OF MICHIGAN

MIDAS

Logistics

What	**An interactive Big Neuroscience Data Analytic Workshop**
Where/Venue	Michigan League, University of Michigan, 911 N University Ave, Ann Arbor, MI 48109, Phone: (734) 764-0446, Web: https://uunions.umich.edu/league
Dates	September 20-21, 2016
Accommodation	o Michigan League, University of Michigan, 911 N University Ave, Ann Arbor, MI 48109, Phone: (734) 764-0446, Web: https://uunions.umich.edu/league o The Holiday Inn Near the University of Michigan, 3600 Plymouth Road, Ann Arbor, MI 48105, 734-796-9800, Web: http://www.hiannarbor.com
Travel Scholarships	60 Travel scholarships are available for Students, Postdocs, Fellows, and other Trainee on a first-come-first-serve bases
URL	www.NeuroscienceNetwork.org/ACNN_Workshop_2016.html

Program

Day 1 (Tue 9/20/16)

Time	Sessions	Details
8-9 AM	Registration	Onsite registration, nametags, booklets, breakfast, coffee, networking
9:00-9:45	Workshop Overview ACNN Background, Scope Organization/Format	(1) Workshop Overview (Ivo Dinov), 15 min (2) Midwest Big Data Hub Health Sciences (Brian Athey), 15 min (3) Advanced Computational Neuroscience Network (Rich Gonzalez), 15-min
9:45-12:15	Big Neuroscience Data, Gaps/Barriers, Analytical Methods, Available Resources, Distributed Services, and Opportunities	(1) Indiana Computational Neuroimaging Research (Franco Pestilli) 20 min (2) OSU Network Based Computing (DK Panda, K Hamidouche, X Lu, H Subramoni) 20 min (3) CWRU Biomedical and Healthcare Informatics (Satya Sahoo) 20 min BREAK 10 min (4) HumanConnectome: Neuroimaging Informatics and Analysis Center (Daniel Marcus) 20 min (5) Northwestern Neuroimaging and Applied Computational Anatomy (Lei Wang) 20 min (6) Michigan Institute for Data Science (Ivo Dinov), 20 min
12:15-1:15	Lunch Break	
1:15-3:15	Unconference Breakouts	Informal self-organized sessions (30-minutes each), round-robin rotations. (4 consecutive slots of 30-min each). Participants lead breakouts and mix with others
3:15-3:30	Break	
3:30-4:30	Breakout sessions reports	Analytics Pipelines Tools/Services; Challenges; Known Solutions; Predictive analytics - methods, tools, protocols, workflows Provenance (data, protocols, results, reproducibility or research findings); Computational Neuroscience Methods; Case-studies, data archives, Cloud Services
4:30-5:30	Posters/Demos	Applications (brain mapping, imaging-genetics, neurodegeneration)
6:00-8:00 PM	Dinner	Social Networking

Program

Day 2 (Wed 9/21/16)

Time	Sessions	Details
8:00-8:30 AM	Registration	Onsite registration, nametags, booklets, breakfast, coffee, networking
8:30-11:00	Core Big Neuroscience Infrastructure	(1) Neuroscience Information Framework (NIF): A Cooperative And Collaborative Information, Resource, and Data Discovery Infrastructure (Jeff Grethe) 25 min (2) Indiana Computational Neuroimaging Research (Franco Pestilli) 25 min (3) OSU Network Based Computing (DK Panda, K Hamidouche, X Lu, H Subramoni) 25 min BREAK 10-min (4) CWRU Biomedical and Healthcare Informatics (Satya Sahoo) 25 min (5) Graphical Pipeline Workflows for Integrated Neuroscience (Ivo Dinov), 25 min
11:00-11:10	Break	
11:10-12:10	Lightning Talks	3-5 min Rapid-Fire talks from the Midwest Big Data Community
12:10-1:10	Lunch Break	
1:10-2:40	Unconference Breakouts	Informal self-organized sessions (3 x 30-minutes each), round-robin rotations: Brain structure, Function, Diffusion, Physiology; File Formats; Pipeline workflow Environments; Cloud Services: JIRA, GitHub, Trello, AWS, MapReduce, Hadoop; Driving Biomedical/Healthcare Challenges, etc.
2:40-2:50	Break	
2:50-3:30	Breakout sessions reports	Analytics Pipelines Tools/Services; Challenges; Known Solutions; Predictive analytics - methods, tools, protocols, workflows; Provenance (data, protocols, results, reproducibility or research findings); Computational Neuroscience Methods; Case-studies, data archives, Cloud Services
3:30-4:00	Live Demos / Try-It-Now	Applications (brain mapping, imaging-genetics neurodegeneration) Workshop Evaluation (http://www.neurosciencenetwork.org/ACNN_Workshop_2016.html).
4:00 PM	Conclusions	Collaborations, joint papers, extramural grant opportunities, Shareable resources, Available Webapps, APIs, workflows


Sponsors
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Advanced Computational Neuroscience Network (ACNN)
Midwest Workshop on Big Neuroscience Data, Tools, Protocols & Services
Workshop Handbook
Federated Data Archives | Pipeline Workflows | Computational Services
Collaborators | Partners
Community Engagement | Training
Automation | Privacy | Provenance
APIs | Standards | Validated Protocols
http://www.neurosciencenetwork.org/ACNN_Workshop_2016.html

Handbook

Organizers

The Advanced Computational Neuroscience Network (ACNN)

- University of Michigan: Ivo Dinov, Rich Gonzales, George Alter
- Indiana University: Franco Pestilli, Olaf Sporns, Andrew Saykin
- OSU: DK Panda, Khaled Hamidouche, Xiaoyi Lu, Hari Subramoni
- CWRU: Satya Sahoo
- Washington University: Daniel Marcus
- Northwestern University: Lei Wang

Workshop Goals

1) Actively engage students, trainees, fellows, junior investigators, and outside researchers in Midwest academic institutions and industry partners
2) Build an active Midwest Neuroscience Network Community
3) Openly share data-intense challenges, datasets, research projects, expertise, software, services, protocols, resources, learning modules
4) Discuss joint (multi-institutional) grants, training opportunities, publications, research projects

Unconference Breakout Sessions

- Use the Breakout Session Board/Online-Form to **review** and **propose** discussion topics at the appropriate times. Be prepared to take notes at your break out session and report on outcomes, achievements, plans, and actions that came out of the discussions

- Unconference Breakout Sessions (consecutive slots of 30-min each). Participants are encouraged to form WGs, lead breakouts, and mix with others. These are Informal self-organized sessions. Participants can rotated through breakouts

https://goo.gl/bKWNvi

Unconference Breakout Sessions

Day 1: 1:00-3:00 PM				
Proposed Topics	1-1:30	1:30-2	2:2:30	2:30-3
Enter Topic1	(tally interested attendees)	…	…	…
…	…	…	…	…

Breakout Session Reports: 3:20-4:20

Analytics Pipelines

- Tools/Services
- Challenges
- Known Solutions
- Predictive analytics - methods, tools, protocols, workflows
- Provenance (data, protocols, results, reproducibility or research findings)
- Computational Neuroscience Methods
- Case-studies, data archives
- Cloud Services
- Other

https://goo.gl/bKWNvi

Day 2: 1:00-2:30			
Proposed Topics	1-1:30	1:30-2	2:2:30
Enter Topic1	(tally interested attendees)	…	…
…	…	…	…

Breakout Session Reports: 2:30-3:00

Analytics Pipelines

- Tools/Services
- Challenges
- Known Solutions
- Predictive analytics - methods, tools, protocols, workflows
- Provenance (data, protocols, results, reproducibility or research findings)
- Computational Neuroscience Methods
- Case-studies, data archives
- Cloud Services
- Other

Hands-on & Try-It-Now Demos

- Sign in to present and showcase hands-on their group's challenges, case-studies, datasets, software tools, services, computational infrastructure, and other materials and resources. Avoid sales pitches and infomercials. Open-science resources should be emphasized
- Draft a **1-page PDF handout** and email to aalison@med.umich.edu
- See the Shareable Resources section

	Day 2: 3:00-4:00		
Demos	3:00-3:20	3:20-3:40	3:40-4:00
Demo 1 Description	(tally interested attendees)	…	…
…	…	…	…

https://goo.gl/bKWNvi

Shareable Resources

- Use the web-form to submit items for inclusion in the sharable resources
- Examples (not an exclusive list) of appropriate resources include:
  - Highly scalable APIs
  - Relevant publications
  - Cloud-services
  - Computational Resources
  - Algorithms, methods, techniques
  - Education and Training Opportunities

https://goo.gl/gpTrRg

Workshop Sponsors

The National Science Foundation
http://www.nsf.gov

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WHERE DISCOVERIES BEGIN

Midwest Big Data Hub
http://MidwestBigDataHub.org

Midwest Big Data Hub
Accelerating the Big Data Innovation Ecosystem

OSU Network Based Computing
http://nowlab.cse.ohio-state.edu

The Ohio State University

High-performance Big Data (HiBD)
Network-Based Computing Laboratory

HiBD
High-Performance Big Data

The Michigan Institute for Data Science (MIDAS)
http://midas.umich.edu

MIDAS MICHIGAN INSTITUTE FOR DATA SCIENCE
UNIVERSITY OF MICHIGAN

The Indiana Imaging Research Facility (IRF)
https://www.indiana.edu/~irf/home

Imaging Research Facility
Indiana University Bloomington

CWRU Biomedical and Healthcare Informatics
https://goo.gl/l19s07

CASE WESTERN RESERVE UNIVERSITY EST. 1826

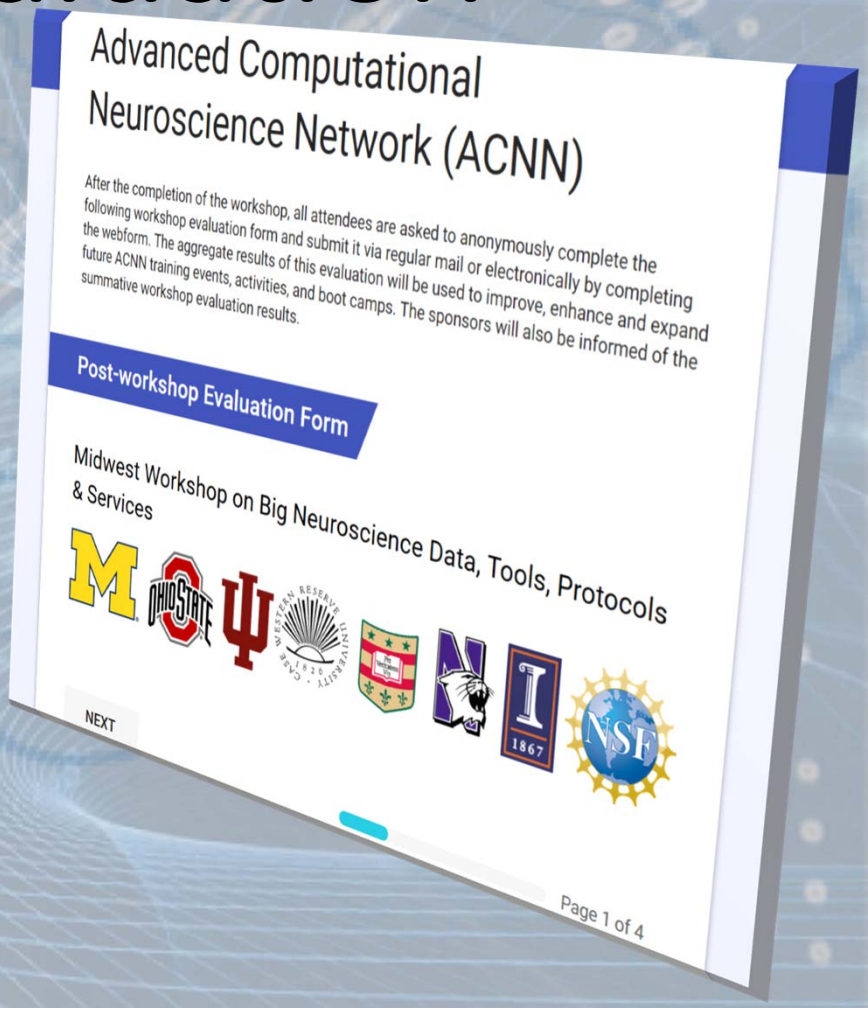
Michigan Nutrition Obesity Research Center (MNORC) http://mmoc.med.umich.edu

Nutrition Obesity Research Center
University of Michigan

Post-conference Evaluation

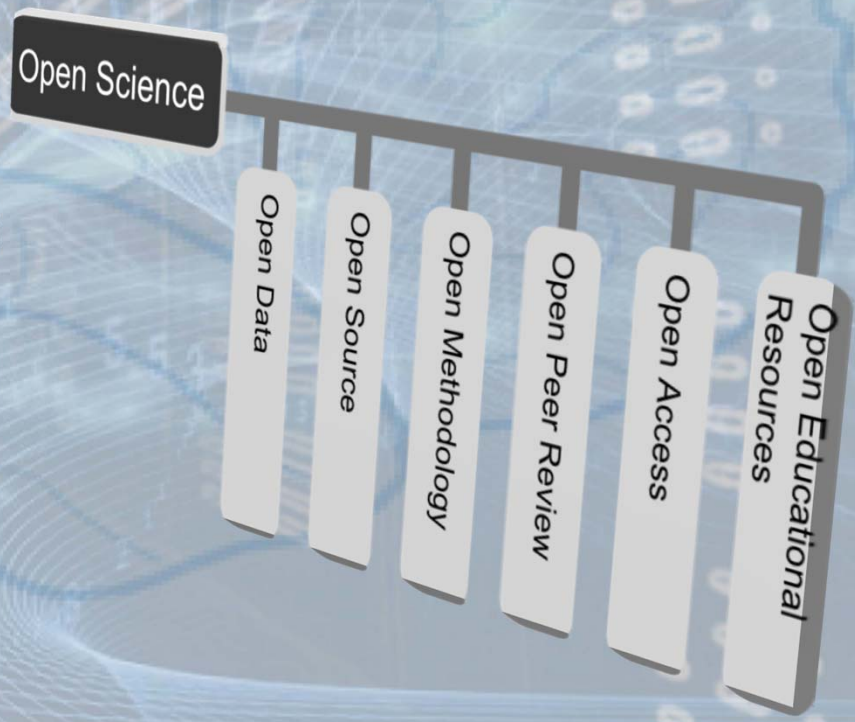
- After the completion of the workshop, all attendees are asked to anonymously complete the web-based workshop evaluation form. The aggregate results of this evaluation will be used to improve, enhance and expand future ACNN training events, activities and bootcamps. The sponsors will also be informed of the summative workshop evaluation results

- http://goo.gl/forms/qSI6PGiN4PfTs6Fg1



Open-Science Principles

- Share resources
- Collaborate
- Permissive licenses (e.g., LGPL/CC-BY)
- Project management (e.g., GitHub/Jira)
- Open-access pubs
- Public-private partnerships
- Co-mentoring of trainees
- Effective transdisciplinary methods
- Resource Interoperability
- Result Reproducibility



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Imaging Research Facility
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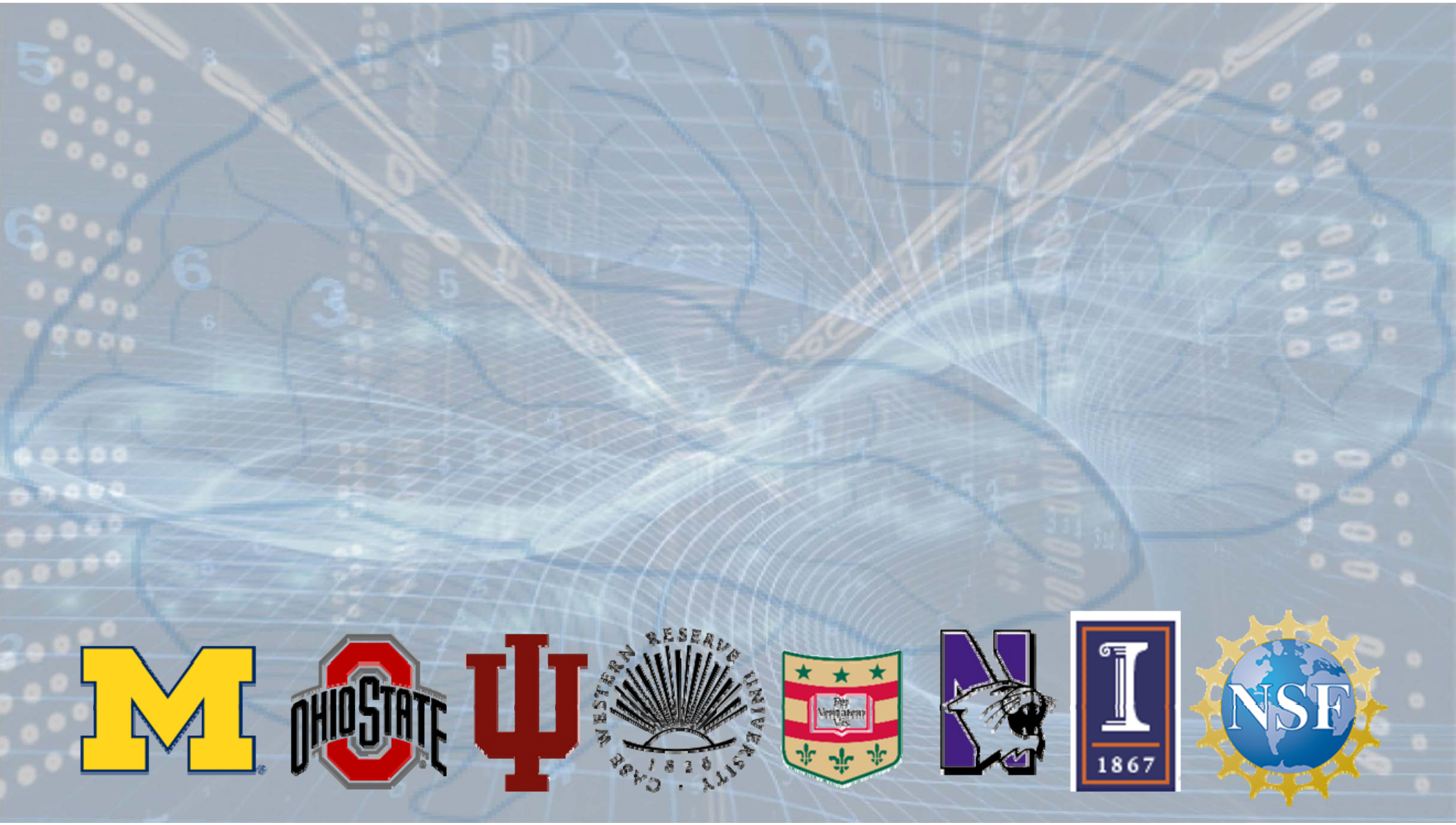
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