

Producing the Next Generation of Data Scientists and Engineers

Rudi Eigenmann

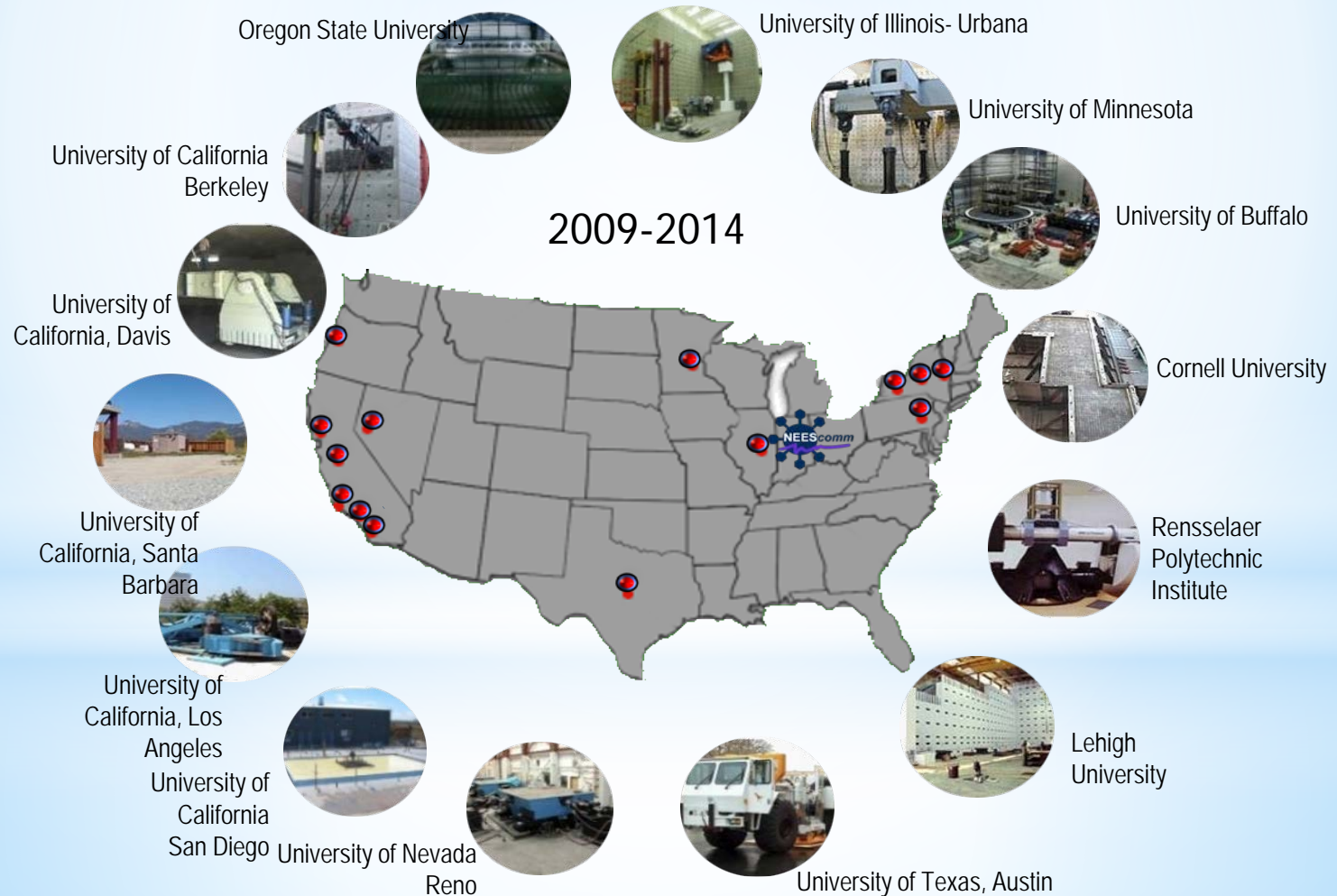
School of Electrical and Computer Engineering

NEES Operations


Purdue University

The Context: NEESHub - nees.org

George E. Brown Jr. Network for Earthquake Engineering Simulation






NEEShub - nees.org



NEEShub

George E. Brown, Jr. Network for Earthquake Engineering Simulation


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RESEARCH




Several resources are available to support research

Network for Earthquake Engineering Simulation (NEES) is a shared national network of 14 experimental facilities, collaborative tools, a centralized data repository, and earthquake simulation software. Together, these resources provide the means for collaboration and discovery in the form of advanced research based on experimentation and computational simulations of the ways buildings, bridges, utility systems, coastal regions, and geomaterials perform during seismic events. [Learn more](#)







[View Activity Map](#)


In the Spotlight

-  FlexTpsSource: FlexTpsSource acquires data from a FlexTps video stream and sends it to the ... - in Tools
-  Frame3DD: Static and dynamic structural analysis of 2D and 3D frames with elastic and ... - in Tools
-  Stability of Rocking Structures - in Publications


Use NEEShub to...

-  **Access** NEES projects: Project Warehouse
-  **Run** simulators and other Tools
-  **Learn** with earthquake data & simulators: NEES Academy
-  **Share** research - Contribute Content


NEES on YouTube



UCSD 7 Story Building Shake Table Test




NEES University of Minnesota T-Wall Experiment




MIST Multi-site soil-structure-foundation interaction test


How-To Videos



NEEShub Overview



Project Warehouse Overview



Project Warehouse Tutorial

Events and Activities

[View All](#) | [Submit an event](#)


OCTOBER

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					


OCT 27 [EERI Nonstructural Elements Seminar](#)

News and Announcements


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Webcast Lecture on NEES TIPS/E-Defense Tests
18 Oct 2011
Webcast Lecture on NEES TIPS/E-Defense Tests Assistant Professor Keri Ryan from ...



Discovering OpenSees: Surfing the Waves of OpenSees
17 Oct 2011
Discovering OpenSees: Surfing the Waves of OpenSees Modeling diaphragms in 2D models ...




NEES Update: September 2011
13 Oct 2011
Julio Ramirez, Director of NEES Operations, provides the NEES community with an informal update of ...

Latest Earthquake Reports

[View All](#)


OCT 25 **M 5.2, eastern Honshu, Japan**



Tuesday, October 25, 2011 17:08:52 UTC
Wednesday, October 26, 2011 02:08:52 AM at epicenter

Depth: 16.00 km (9.94 mi)


OCT 25 **M 5.7, eastern Turkey**




Tuesday, October 25, 2011 14:55:08 UTC
Tuesday, October 25, 2011 05:55:08 PM at epicenter


Depth: 19.30 km (11.99 mi)

OCT 25 **M 5.2, Ascension Island region**



Tuesday, October 25, 2011 06:07:31 UTC
Tuesday, October 25, 2011 05:07:31 AM at

 ASCE Paper (Rudi).zip

 Show All

Rudi Eigenmann, Producing Big Data Scientists and Engineers

NEEShub - nees.org

NEEShub - Network for Earthquake Engineering Simulation

nees.org https://nees.org/warehouse/project/32

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You are here: Home » Project Warehouse » Results » NEES-2005-0032

NEES Project Warehouse

Using NEES as a Testbed for Studying Soil-Foundation-Structure Interaction: Shaking Table Tests

Project Experiments Data Team Members More

warehouse search GO

PI(s): Mehdi Saaidi

Dates: September 15, 2003 to Present

Facility: [University of Nevada at Reno](#) , [Lehigh University](#)

Organization(s): Lehigh University, University of Nevada at Reno

Description: The primary objectives of this project are two folds: (1) to demonstrate how researchers from multiple universities can conduct collaborative research using a network of experimental facilities distributed around the country and utilizing the advanced... [\(more\)](#)

Sponsor: NSF - 0323862 [\(view\)](#)


Website(s): [NEES@UNR Project Page \(view\)](#)

Equipment: [View Details](#)

Tools: inDEED

Publications: [Nathan Johnson](#); [Mehdi Saaidi](#); [David Sanders](#), "CCEER-06-02: Large-Scale Experimental and Analytical Seismic Studies of a Two-Span Reinforced Concrete Bridge System" [\(view\)](#)

Tags (related projects): [Soil Structure Interaction](#) [Reinforced Concrete](#) [Bridges](#) [Centrifuge](#) [Shake Table](#)



Completed bridge before shake table testing

3 Views

0 Downloads

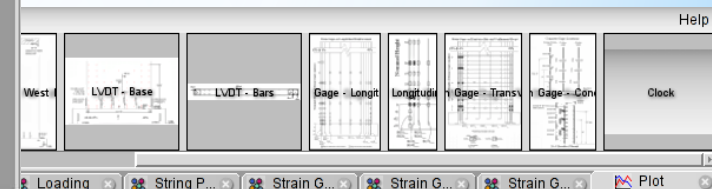
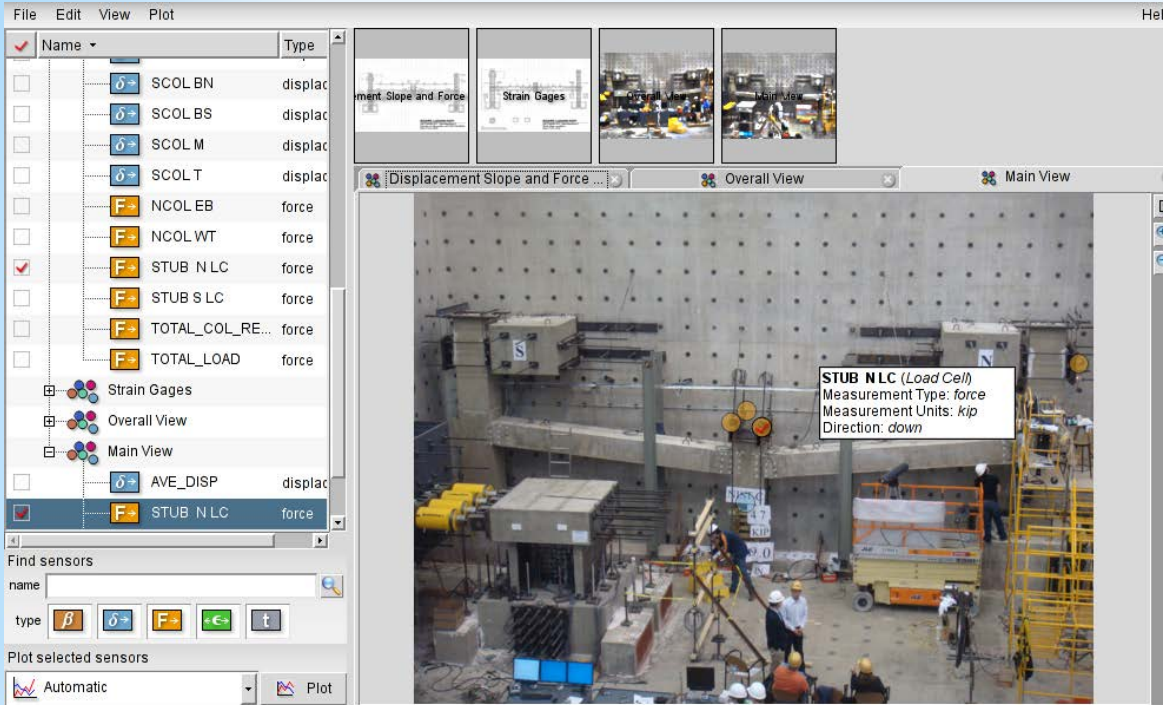
Curation progress:

Sent PI link to Project Curation Report, project is already

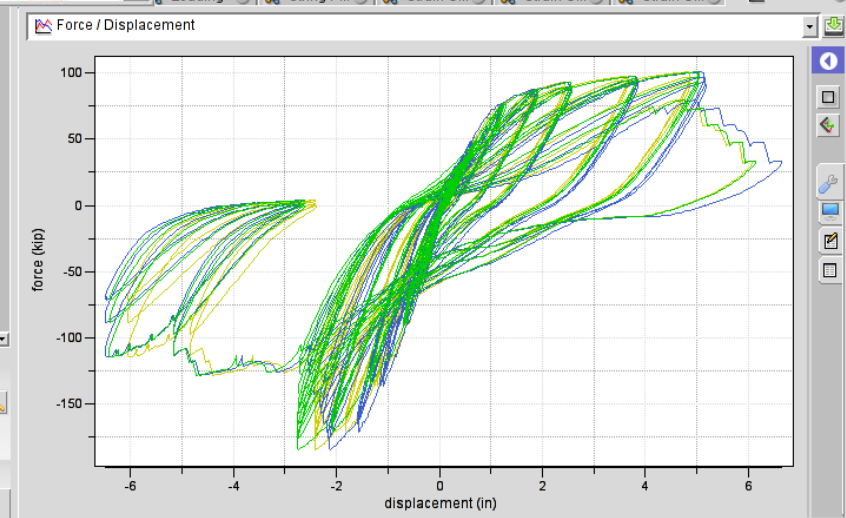
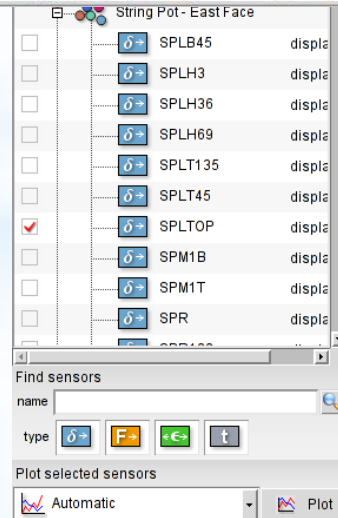
Find: hose Next Previous Highlight all Match case Phrase not found

NEEShub - nees.org

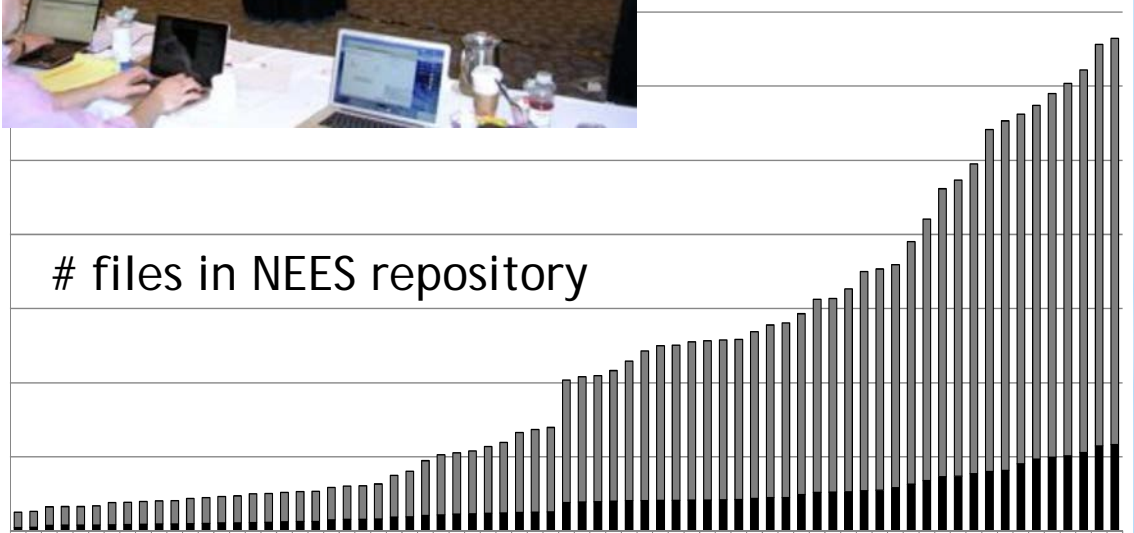
inDEED online data browser



data and tool
co-location is key



Data, Data, Data...

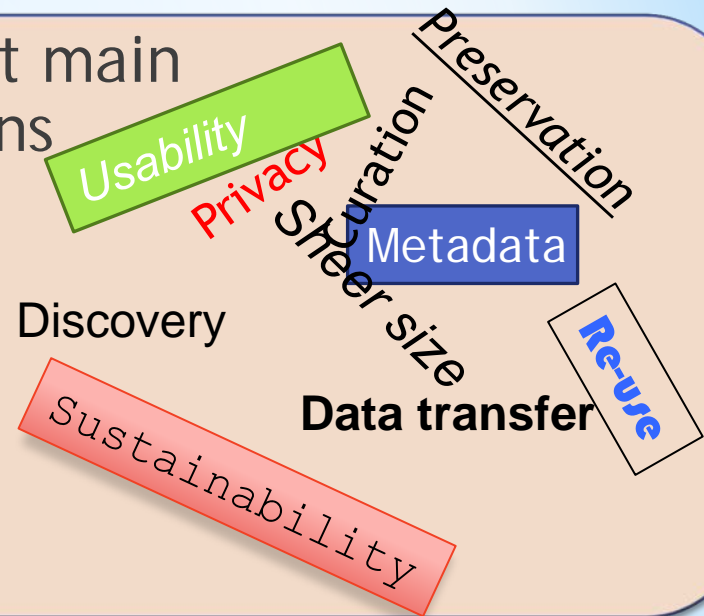


NEES Data by Comparison: Scope & Diversity of data

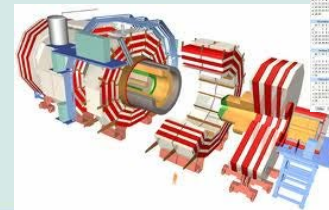
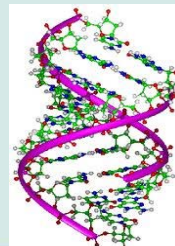
NEES has 14 sites,
engineering data



Different main
concerns



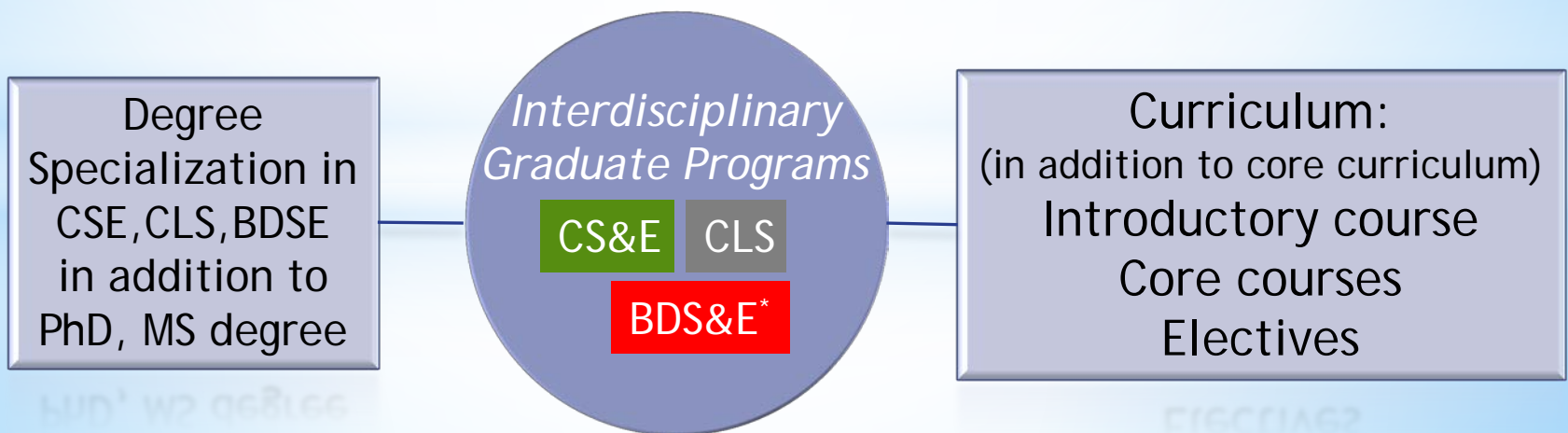
Others: Data from earth & universe observation, biology,
accelerators, medical, GPS, administrative info



How to Produce the Next Generation of Data Scientists and Engineers?

Purdue Interdisciplinary Program in Big Data Science & Engineering

modeled after Purdue's Computational Science and
Engineering program



*under development

BDS&E Courses

Enabling Technology

- * **Computer Science, Computer Engineering:** introduction to data management, machine learning and data mining, multimedia systems, pattern recognition and decision making processes, distributed computing systems, information retrieval
- * **Statistics:** statistical theory; statistical models; statistical methods; exploratory data analysis; statistical Machine Learning; computational algorithms for data analysis, interactive languages for data analysis
- * **Libraries:** Information organization; digital collection management; data ingest, archival, preservation, access; digital data curation; metadata & resource description

Data-based scientific methods

- * **Geo Sciences:** Advanced Spatial Ecology and GIS, Digital Remote Sensing and GIS, Geomatics;
- * **Physics:** Computational Physics, Quantum Computing, Particle Physics;
- * **Civil Engineering**
- * **Biology**
- * **Agriculture**
- * ...

*New course
developments
needed !*

New BDS&E Faculty Needed

Purdue Faculty Hiring Cluster in “Big Data”

enabling technologies:
Computer Science, Computer Engineering,
Libraries

application domains:
Civil Engineering, Physics

Concluding Remarks

- * Big Data enables a fundamental new scientific method
“the 4th pillar of science”
- * Producing the next generation of Big Data Scientists and Engineering is a challenge in itself
- * Purdue is creating a new interdisciplinary graduate program in Big Data Science&Engineering
- * A new generation of Big Data faculty is also needed
Purdue is hiring in Big Data