

NSF MRI: Development of an Instrument for Deep Learning Research

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Overview

This project will develop and deploy a novel instrument for accelerating deep learning research at the University of Illinois. The instrument will integrate the latest computing, storage, and interconnect technologies in a purpose-built shared-use system. This Instrument will deliver unprecedented performance levels for extreme data-intensive emerging fields of research with far-reaching impacts in many areas, such as computer vision, natural language processing, artificial intelligence, healthcare and education. The instrument development will be driven by the UofI deep learning community needs and will be carried out in collaboration with IBM and Nvidia. The instrument will serve as a focal point for the rapidly growing deep learning research community at UofI, enable expansion of several research programs, and contribute to STEM education and training.

https://www.nsf.gov/awardsearch/showAward?AWD_ID=1725729

http://www.ncsa.illinois.edu/enabling/data/deep_learning

Personnel

Co-PIs	Development team	Advisory Board
Bill Gropp < wgropp@uiuc.edu >	Volodymyr Kindratenko	
Volodymyr Kindratenko < kindrtnk@illinois.edu >	Research engineers: Dawei Mu, Yan Zhan	
Roy Campbell < rhc@illinois.edu >	Postdocs: Shirui Luo, Ashish Misra	
Jian Peng < jianpeng@illinois.edu >	GRAs: Benjamin Rabe, Hadi Hashemi	

Campus collaborators

Participants Name	Department/ Affiliation	Title	Research Area	Project Link
N. Hovakimyan	MechSE	Prof.	Agricultural Data Analysis	
M. Hudson	Crop Sciences	Prof.	Bioinformatics	
S. Sinha	CS	Prof.	Bioinformatics	
E. Tajkhorshid	MCB	Prof	Bioinformatics	
G. Robinson	IGB	Director of IGB	Bioinformatics	
J. Peng	CS	Asst. Prof.	Bioinformatics	
M. Do	ECE	Prof.	Computer Vision	
R. Yeh	ECE	Grad. Student	Computer Vision	
G. Allen	Astronomy/Education	Prof/Assoc. Dean Education	Cosmology & Astrophysics	
R. Brunner	Astronomy	Prof.	Cosmology & Astrophysics	
D. George	Astronomy	Grad. Student	Cosmology & Astrophysics	
E. Escudero	NCSA	Post-doc	Cosmology & Astrophysics	
M. Turk	Info. Sci.	Asst. Prof.	Cosmology & Astrophysics	
R. Farivar	CS	Adj. Sr. Lecturer	Deep Learning	
S. Wang	Geography	Prof	Earth and Environment	
J. Sirignano	ISE	Asst. Prof.	Financial Engineering	

Y. Fan	ECE	Grad. Student	Image Generation & Analysis	
D. Forsyth	CS	Prof.	Image Generation & Analysis	
T. Huang	ECE	Prof.	Image Generation & Analysis	
G. Ko	ECE	Grad. Student	Image Generation & Analysis	
J. Yu	ECE	Grad. Student	Image Generation & Analysis	
J. Towns	NCSA	Executive Director	Information and Technology	
N. He	ISE	Asst. Prof.	Large-scale Optimization	
R. Nagi	ISE	Director of ISE	Large-scale Optimization	
H. Hashemi	CS	Grad. Student	Machine Learning	
R. Rutenbar	CS	Prof/Head of CS	Machine Learning	
S. Koyejo	CS	Asst. Prof.	Machine Learning	
J. Hockenmaier	CS	Assoc. Prof.	Natural Language Processing	
M. Sammons	CS	Research Asst. Prof.	Natural Language Processing	
L. Schwartz	Linguistics	Asst. Prof.	Natural Language Processing	
L. Paquette	Education	Asst. Prof.	Social Network Analysis	
Y. Hashash	CEE	Prof.	Soil Mechanics	
K. McHenry	NCSA	Senior Research Scientist	Spatial Data Analysis	
A. Das	ECE	Grad. Student	Speech Recognition	
M. H. Johnson	ECE	Prof.	Speech Recognition	
P. Smaragdis	CS	Asst. Prof.	Speech Recognition	
W. Gropp	NCSA/CS	Director, NCSA/Prof. CS	Systems & Software	
I. Gupta	CS	Assoc. Prof.	Systems & Software	
D. Katz	NCSA	Asst. Director Sci. Software & Appl.	Systems & Software	
V. Kindratenko	NCSA/ECE	Senior Research Scientist	Systems & Software	
K. Nahrstedt	CS	Prof.	Systems & Software	
R. Campbell	CS	Prof/Assoc. Dean IT	Systems & Software	
S. Lazebnik	CS	Assoc. Prof.	Text mining	
J. Han	CS	Prof.	Text Mining	
W.M. Hwu	ECE	Prof.	Text Mining	
C. Zhai	CS	Prof.	Text Mining	

System

P9 + NVIDIA Volta GPUs + HDR IB