VOL 3 ISSUE 1 | FALL 2022 NEWSLETTER

NJIT

Institute for Data Science

A New Ph.D. Program in Data Science Coming Soon to NJIT

At the meeting of the NJ Presidents' Council (NJPC) of the presidents of NJ colleges and universities that happened on December 12, 2022, the new Ph.D. degree program in Data Science received its final State approval. It will be administered jointly by the Department of Data Science in the Ying Wu College of Computing (YWCC) and the Department of Mathematical Sciences in the College of Science and Liberal Arts (CSLA).

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Experts at NJIT's Data Science Summit Propose New Paths in Hardware and AI

Written by: Evan Koblentz

Link to Article

New kinds of unconventional computer hardware, along with new ways of considering software responsibility, are both necessary if the next wave of data science will do anything more useful for the world than increase corporate profits.

Such were two key messages expressed by experts from IBM and Google at the Data Science Summit this month, hosted by New Jersey Institute of Technology's Institute for Data Science, in the NJIT @ JerseyCity location which also houses the university's Institute for Future Technologies and various graduate-level courses from Ying Wu College of Computing.

"From the large turnout of attendees at our Data Science Summit, ranging from undergraduate and graduate students to industrial researchers, it's clear the presented topics from cybersecurity to responsible AI have societal importance," said David Bader, director of the Institute for Data Science, "The 2022 Data Science Summit was a huge success," he said. "It was a pleasure spending the day making new connections between our attendees."

Speaking Engagements:

CLSAC 2022 Chesapeake Large-Scale Analytics Conference
October 24 -27, 2022
Graduate Annapolis, Maryland

Link to Presentation

On Wednesday, October 26th David Bader spoke at the CLSAC 2022 Conference titled "To the Edge and Back: Ubiquitous Analytics" during the "session 3: software" portion of the conference moderated by John Feo (Pacific Northwest National Laboratory) David Bader gave his presentation titled "Massive Dataset Analysis in Arkouda."

Ph.D. Dissertation Proposal Defense Announcement

"Algorithm & System Design for Productive Massive-Scale Graph Analytics"

Oliver Alvarado Rodriguez (Computer Science)
12/05/2022

Advisor: David Bader

INSTITUTE UPDATES

Recent Student Activities:

SC 2022 Conference
Dallas, Texas
November 13-18, 2022

Oliver Oliver Alvarado Rodriguez was awarded an IEEE TCHPC Travel Award to attend SC22 (Supercomputing 2022). Event Page.

CENTER FOR ARTIFICIAL RESEARCH

Conference Papers:

Wenlu Du, Junyi Ye, Jingyi Gu, Jing Li, Hua Wei, Guiling Wang. SafeLight: A Reinforcement Learning Method toward Collision-free Traffic Signal Control. Accepted by the Thirty-Seventh AAAI Conference on Artificial Intelligence (AAAI'23). Click Here.

Truc Nguyen, Phung Lai, NhatHai Phan, My T. Thai, XRand: Differentially Private Defense against Explanation-Guided Attacks, to be published at the Thirty-Seventh AAAI Conference on Artificial Intelligence (AAAI'23). Click Here.

Hao Mei, Xiaoliang Lei, Longchao Da, Bin Shi, Hua Wei, LibSignal: An Open Library for Traffic Signal Control, Accepted by NeurIPS 2022 Workshop: Reinforcement Learning for Real Life. Click Here.

CENTER FOR ARTIFICIAL RESEARCH

Ph.D. Dissertation Proposal Defense Announcements:

"Deep Learning for Visual Synthesis"

Ankan Dash (Computer Science)
December 2022

"Ensemble Learning as a Resource-Constrained Peer Process"

Ehsan Beikihassan (Computer Science)
September 2022

"Dependent Aware Unsupervised Deep Representation Learning"

Yunpeng Xu (Computer Science)
August 2022

"Gaussian Process Prior Variational Autoencoder for fMRI-based Gaze Prediction and Behavior Analysis"

Le Gao (Computer Science)
August 2022

"Reinforcement Learning for Intelligent Transportation Systems"

Wenlu Du (Computer Science)
August 2022

Journal Publications:

S. He, Y. Lu, Q. Tang, G. Wang, and C.Q. Wu. Blockchain-Based P2P Content Delivery with Monetary Incentivization and Fairness Guarantee. Accepted by IEEE Transactions on Parallel and Distributed Systems, October 2022 (TPDS22). Click Here.

Conference Papers:

W. Liu, D. Yun, and C.Q. Wu. GLEE: GPR-based Latent Effect Elimination for Performance Prediction of Big Data Transfer. In Proceedings of the IEEE Global Communications Conference, Rio de Janeiro, Brazil, December 4-8, 2022 (Globecom22). Click Here.

E. Kenney, Q. Tang, C.Q. Wu. Anonymous Traceback for End to End Encryption. In Proceedings of the 27th European Symposium on Research in Computer Security, September 26, 2022 (ESORICS22). Click Here.

S. He, T. Sun, Q. Tang, C.Q. Wu, N. Lipka, C. Wigington, and R. Jain. Secure and Efficient Agreement Signing atop Blockchain and Decentralized Identity. In Proceedings of International Conference on Blockchain and Trustworthy Systems, Chengdu, China, August 4-5, 2022 (BlockSys22). Click Here.

H. Alquwaiee and C.Q. Wu. On Performance Modeling and Prediction for Spark-HBase Applications in Big Data Systems. In Proceedings of IEEE International Conference on Communications, Seoul, South Korea, May 16-20, 2022 (ICC22). Click Here.

DOE Grant Will Recalibrate Current Climate Change Data

Written by: Michael Giorgio
Link to Article

Professors Aritra Dasgupta and Chase Wu from the Department of Data Science in NJIT's Ying Wu College of Computing are developing software to take more advantage of simulation data used to study climate science through a $145,972 grant from the U.S. Department of Energy (DOE). The project aims to improve existing methods traditionally employed by climate scientists to more reliably predict the effects of cloud simulations related to global warming.

The Research and Development Pilot Program awards over $4 million in funding to colleges and universities under-represented in DOE's foundational climate, Earth, and environmental science research investments. The grants will help build capacity and achieve the goal of broadening institutional participation in DOE's science investments.

Dasgupta is the principal investigator for the project, A Scientist-in-the-Loop Data Analytics Framework for Intelligent Simulation Model Tuning and Validation. The expected outcome will be interactive and user-friendly software that carefully combines domain knowledge with data science methods, empowering scientists to focus on model development without worrying about the scale and complexity of simulation data. The findings will have a direct impact on addressing urgent issues of climate change, particularly natural disasters such as hurricanes, tornados and flooding, among other extreme events.

STRUCTURAL ANALYSIS OF BIOMEDICAL ONTOLOGIES CENTER (SABOC)

Journal Publications:

Li C-y, Renda M, Yusuf F, Geller J, Chun SA. Public Health Policy Monitoring through Public Perceptions: A Case of COVID-19 Tweet Analysis. *Information*. 2022; 13(11):543. Click Here.

Conference Papers:

SABOC Student Navya Martin Kollapally presented a paper at the 2022 IEEE International Conference on Bioinformatics and Biomedicine (BIBM).

Kollapally, N. M., Chen, Y., Xu, J., & Geller, J. (2022). An Ontology for the Social Determinants of Health Domain, IEEE BIBM 2022. Click Here.

ACM SIGMOD Blog Anniversary Edition hosts Senjuti Basu Roy

This year the Association for Computing Machinery is running an ACM SIGMOD Blog: Anniversary Edition (2022 - 2012), which visits different parts of the world. In this anniversary post, Senjuti Basu Roy, the Panasonic Chair in Sustainability and an Associate Professor in the Department of Computer Science is discussing preference aggregation models (selection by-election) and Sortition and proposes laying out a middle ground which perhaps is the best of both worlds. Click Here.

Journal Publications:

Mouinul Islam, Mahsa Asadi, Sihem Amer-Yahia, Senjuti Basu Roy, A Generic Framework for Efficient Computation of Top-k Diverse Results, to appear VLDB Journal 2023. Click Here.

Conference Papers:

Dong Wei, Mouinul Islam, Baruch Schieber, Senjuti Basu Roy, Satisfying Complex Top-k Fairness Constraints by Preference Substitutions, Proceedings of the VLDB Endowment, to appear VLDB 2023. Click Here.

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