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NJIT | Institute for Data Science

Aiming to Democratize Supercomputing with NSF Grant

Ordinary people could soon have a greater ability to analyze massive amounts of information, based on new algorithms and software tools being designed at NJIT, intended to simplify access to a programming interface from data scientists at the Department of Defense.

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Institute for Data Science Aims to Democratize Supercomputing With NSF Grant

Written by: Evan Koblentz
Published: March 17, 2021

Click here to read the full NJIT News article
URL: https://news.njit.edu/institute-data-science-aims-democratize-supercomputing-nsf-grant

Ordinary people could soon have a greater ability to analyze massive amounts of information, based on new algorithms and software tools being designed at NJIT, intended to simplify access to a programming interface from data scientists at the Department of Defense.

It's relatively straightforward to analyze data sets of up to several hundred gigabytes, as the required software is readily available to students and small businesses, but there's a higher barrier to entry for working with tens of terabytes, which generally requires extensive training on high-performance computers, Institute for Data Science Director David Bader explained.

Bader anticipates that his team's efforts, being designed with an award from the National Science Foundation, will greatly increase the user base for supercomputing especially among women, high school students, and other underrepresented groups in STEM fields. Those groups tend to have the least access to that power today. If the user base increases, they'll demand even more tools, which could cause the industry to rethink their design motivations and democratize high-end computing systems. (Click the link above to read full article)

RESEARCH UPDATES

BGU-NJIT Joint Seed Research Fund

Joint Research Projects between NJIT Ying Wu College of Computing Faculty and Ben-Gurion University of the Negev (BGU) to identify common interests and development research relationships:

Chase Wu (Center for Big Data Co-Director) on a data-driven approach to optimizing titled: "Fusing Intelligence into Big Data Transfer for Predictable Optimal Performance" with Gil Einziger (BGU).

David Bader (Institute for Data Science Director) with Michael Elkin (BGU) collaboration on dynamic world applications in cybersecurity, health, and social sciences titled: "Streaming Graph Algorithms."

Reza Curtmola (Cybersecurity Research Center Co-Director) and Yossi Oren (BGU) awarded a seed grant titled: "Side-Channel based Targeted Deanonymization."

Making COVID Terminology Comprehensible

Research Team: *Yehoshua Perl (SABOC Co-Director), James Geller (SABOC Co-Director), Members of SABOC*

The medical community's open-source Coronavirus Infectious Disease Ontology (CIDO) was released in January 2019 by University of Michigan Associate Prof. Oliver He. It has been continuously extended and now stores extensive conceptual knowledge about COVID and Corona Virus infections. CIDO quickly grew to over 6,000 concepts and 113 relationship types and continues to grow.

The problem with a large ontology such as CIDO is that it is hard to understand and hard to learn, because of its size and complexity.

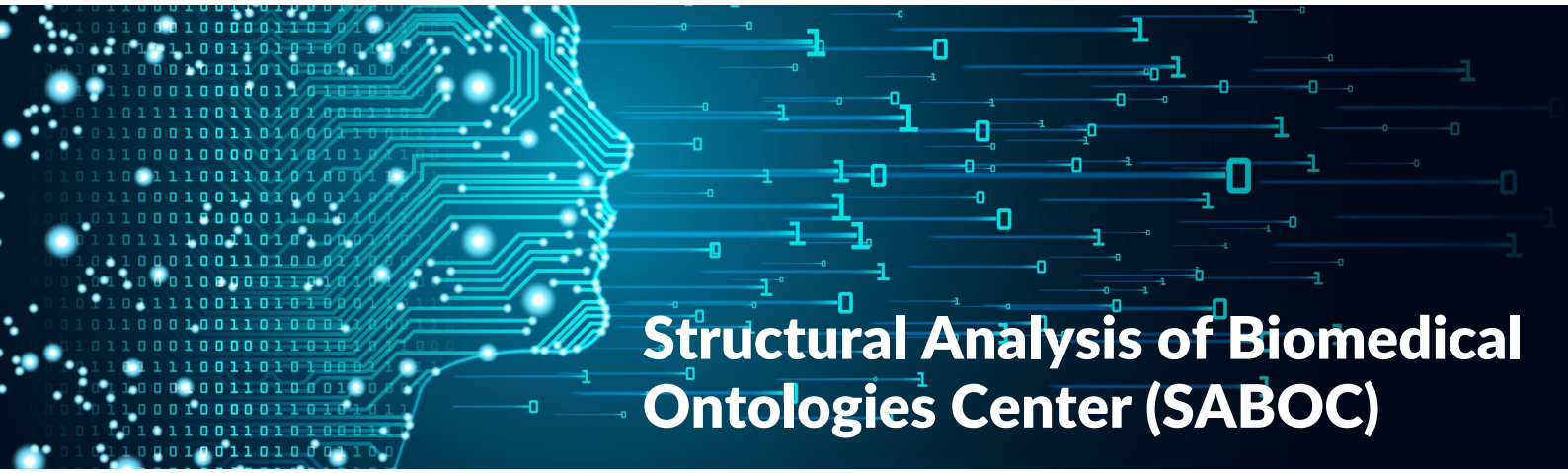
Yehoshua Perl, James Geller and their students in the Structural Analysis of Biomedical Ontologies Center applied the Ontology Abstraction Framework (OAF), originally developed from 2015 to 2017 by their postdoctoral student Christopher Ochs, to simplify and visualize the complexity of CIDO.

OAF is based on a theoretical framework that has been created and optimized over two decades of research by Perl, Geller, and their students.

The general public's interest in COVID may wane after a vaccine becomes mainstream, which is happening now with Moderna and Pfizer in the US. But CIDO and the software to make sense of it all will be relevant for years to come.

Even when a vaccine is available, it will take time for the whole world population to get vaccinated. Furthermore medicine will have still to deal with the leftovers of the pandemic — all those symptoms and problems which people have after they were cured already. Another issue is that CIDO will be very helpful when the next pandemic hits. It will need to be adapted, but the framework and many concepts will still be applicable.

Click Here to Read Further about this Research



Student Spotlight

Denise Cherdak an Information Technology Student has been selected by a committee to participate in the New Jersey Big Data Alliance-Rutgers MBS Student Externship Program for the Spring Semester with Newark-based 1Huddle. 1Huddle uses gamification or Employee Training. The Externship provides an opportunity for the students to gain real-world experience in the data science field. The students are funded through a US-EDA grant awarded to NJBDA.

Wuji Liu (Center for Big Data Ph.D. Student) Will complete a summer internship program at Amazon. "As an Applied Scientist Intern, I will work on research projects focused on expanding the breadth and depth of specific advanced domain space for Amazon technology. It offers an opportunity to design, develop and test new algorithms and codes to solve complex problems while partnering with a group of experienced engineers and scientists."

Vipina Kuttichi Keloth

Date: 4/16/21
Will defend Ph.D. Dissertation for the Department of Computer Science

"Methods for Extending Biomedical Reference Ontologies and Interface Terminologies for EHR Text Annotations"

The dissertation Committee includes the Advisor Dr. James Geller (SABOC Co-Director), Co-advisor Dr. Yehoshua Perl (SABOC Co-Director), Dr. Michael Halper (SABOC Faculty Collaborator).

DATA SCIENCE SEMINAR SERIES

New Jersey Institute of Technology's Institute for Data Science Spring 2021 seminar series is coming to an end. Join us for the remaining seminars held Wednesdays at 4 PM Eastern Time. The series includes data science thought leaders from academia and industry.

https://datascience.njit.edu/events/

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April 7 - Charles Leiserson,
Massachusetts Institute of Technology

April 14 - Aydin Buluc,
Lawrence Berkeley National Lab
University of California, Berkeley

April 21 - Tina Eliassi-Rad,
Northeastern University

April 28 - Joseph JaJa,
University of Maryland

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