MU Big Data researchers build neuro collaborations through symposium

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The University of Missouri is already doing groundbreaking work in pairing Big Data experts with clinical and life science practitioners in order to produce cutting-edge results out of the wealth of data the latter groups create with their research. And a group of College of Engineering researchers is looking to expand collaborative efforts even further.

Electrical Engineering and Computer Science faculty members Satish Nair, Dong Xu and Prasad Calyam, along with Trupti Joshi, the School of Medicine's director of Translational Bioinformatics, hosted the first Neuro Big-Data Symposium on Oct. 6 at the Bond Life Sciences Center.

"MU, with its 50-plus neuro faculty and as many computational/informatics faculty, is ideally positioned to take advantage of Big Data opportunities in neuroscience," said Nair.
The event was sponsored by the National Science Foundation, Mizzou Engineering and the MU School of Medicine, and its stated goal was “to spur computational and cyber neuro research at Mizzou via the development of free cyber and software Big Data tools for neuroscience research and facilitate interactions among physical sciences faculty with Big Data expertise and wet lab, behavioral and clinical neuro faculty with Big Data needs.”

The team of Nair, Xu, Calyam and Joshi are spearheading a new web portal called CyNeuro, which will be configured to expedite the work of those doing neuroscience research by providing access to software, databases, computational models, high-performance computing systems, cloud storage, recommender systems and best practice approaches in order to make the data seeking and data analysis process more rapid, seamless and user friendly for users at various skill levels.

“These are tools that everyone is going to use,” said Hannah Wroblewski, a graduate student of Calyam's VIMAN Lab who is involved with the project. “Even among most neuroscientists, they don’t always have the most advanced data science capabilities, and so it puts MU on the map by creating an easy way to use web interfaces, data visualizations and representations that even people without very heavy coding experience can use.”

During the half-day event, participants were exposed to discussion of plans for the portal and its capabilities, ongoing collaborations between scientists and Big Data experts on campus, and poster sessions and discussions were held to enable attendees to discuss their current work and current Big Data capabilities in order to foster future potential collaborations.

In addition, a new graduate projects course was announced for the College of Engineering that will allow students to work on real-world development of tools for the CyNeuro portal and for MU researchers in need of Big Data solutions.

“We’re making sure we understand the needs of the community when we start implementing our CyNeuro platform, which will adopt and expand functionalities from our well established SoyKB and KBCommons frameworks for neuroscience community,” Joshi explained.

“You make investments in one (Big Data platform), and it is going to have much more of a broader impact on various researchers on campus.”

Bond Life Sciences Center Interim Director Walter Gassmann said he was excited to see the expansion of Big Data resources at Mizzou, citing its importance to the life sciences community as a whole, especially with the involvement of Xu and Joshi, who are both faculty of Bond Life Sciences.
“Biology is a great example, but there are networks in other aspects of life sciences, and we need informatics to understand it,” he said.

Joshi added that many of the participants are expected to return at the end of the year to discuss their needs and what the CyNeuro portal can provide and ways to continue moving forward with yet another great example of the great work being done at MU in the area of Big Data Analytics.