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## LSU'S Tiger Den Data Storage System To Provide 'EASE OF LIFE'

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## LSU researchers have been awarded \$500K by the National Science Foundation to build a shared data storage system to elevate the research experience not just at LSU, but at universities across Louisiana.

The image of the professor or professional researcher trudging down the hall to their office carrying multiple hard drives under each arm is not unrealistic in today's data-driven world. University researchers have traditionally been expected to spend a lot of time coming up with their own ways to save and store their sometimes huge amounts of research data.

LSU has a plan to solve this conundrum, and it's called Tiger Den.

Tiger Den is, as put by Le Yan, assistant director of high-performance computing at LSU's Information Technology Services and the principal investigator on the National Science Foundation grant, "a general-purpose, centrally managed storage for research data." It will provide 1.5 petabytes of data storage for LSU faculty, staff and students, as well as for researchers at many other Louisiana universities.

Data-driven disciplines that will use Tiger Den include the biological and biomedical sciences, hydrological and ocean modeling, astrophysics, science and engineering related to materials, climate change and more. However, the resource will be made available to researchers in every discipline under the LSU umbrella.

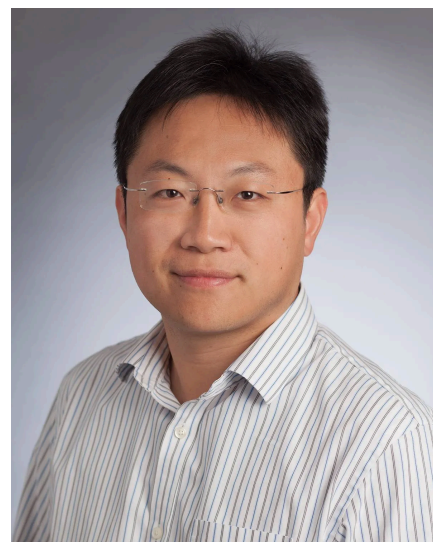
Which is fantastic, Yan says, because, "Right now, the process of storing research data is kind of all over the place. Researchers lose things and can't find them on all those hard drives when they need them. We feel the pain," he says.

Tiger Den aims to centralize important research data and make them accessible and easily shareable.

Xiaochen Zhao, a postdoctoral researcher at LSU's Center for Computation & Technology, or CCT, works on coupled ocean modeling. "So, my need [for Tiger Den] is most specific as, in my work, we are implementing an operational forecast system for the entire Mississippi River Basin, and also the Gulf of Mexico. Every day we run the hydrological and ocean model to provide river and ocean forecasts for the next three days. That means the system generates a large amount of modeling data every day. We need to archive modeling data to our own long-term storage system maintained by CCT, and also upload the forecast products to the website, which is accessible to the public. No wonder, every week I struggle to check if we have enough storage on our HPC," bemoans Zhao, "or how to move my own data to my own personal hard drives."

One of LSU's most cited researchers, Brant Faircloth, Moreland Family associate professor of biological sciences, currently runs his own storage system, using a combination of local and cloud storage and paying the associated costs. "Simply put, Tiger Den is just going to make my life easier," Faircloth says, adding, "Right now, many individual researchers are spending time managing their own data storage systems, and that's just not an efficient use of resources. Not having to manage my own storage is time I can spend doing other stuff that's, quite frankly, more important. Not to mention the fact that some people are [creating their own data storage systems] better than other people. And if you're not doing it well, then you run the risk of losing data that, in some cases, we've spent hundreds of thousands of dollars to generate."

Faircloth reiterates, "The biggest thing for me about Tiger Den will be ease of life."



Le Yan, assistant director of high-performance computing at LSU's Information Technology Services and principal investigator on the National Science Foundation grant to establish Tiger Den.

# Supporting a Research Community

Not only will LSU researchers be invited to conveniently and securely store their data on Tiger Den, “You can share the data with collaborators, with researchers at other universities, with a whole community,” says Yan. “We hope to grow a community that will take research to another level.”

LONI, which stands for Louisiana Optical Network Infrastructure, is a state-wide fiberoptic network providing top-tier networking and HPC solutions to its member institutions. Through its storage service, LONI aims to bolster enrollment and employment opportunities for member higher education institutions, potentially fostering extensive research collaboration and enhancing the faculty research environment throughout Louisiana.

“Tiger Den will provide a foundation for collaboration with researchers at many other Louisiana universities. Our hope is for Tiger Den to serve as a model for many other centralized data storage systems in Louisiana in the future,” says Nayong Kim, assistant director of CCT.

“We don’t just want our group to use it, but anyone to access the data stored on Tiger Den,” says Zhao. “Especially for Louisiana, one of the issues we are very interested in is how we can help to simulate and analyze compound flooding. When the hurricane comes, we want to use our operational system and the historical data we have archived to provide a reliable forecast of this type of flooding. We expect any users who are interested in river and coastal management to have access to our products and to help protect our communities from flooding.”

With Tiger Den, explains Faircloth, “If I want to share data, I can simply send a link to those data to my collaborator, who then can access them in a very straightforward manner, versus all these weird contortions that we currently have to go through to share data sets of relatively large size.”

## Ramping Up

Tiger Den will initially be funded by a \$498,317 grant from the National Science Foundation’s Office of Advanced Cyberinfrastructure and supported by the Established Program to Stimulate Competitive Research, or EPSCoR. The team who wrote the proposal consisted of researchers and faculty from Information Technology Services (Le Yan, Sam White, Feng Chen), LSU Libraries (Michael Stewart), College of Science (Brant Faircloth, Juana Moreno, Matthew Penny, Ka-Ming Tam), Center for Computation & Technology (Nayong Kim), College of the Coast & Environment (Xiaochen Zhao, George Xue, Chunyan Li) and College of Engineering (Jangwook Jung).

The Tiger Den team looks to deploy the storage system in mere months, but it may take longer for its full benefits to be realized.

Michael Stewart, who works as assistant director of libraries technology at LSU Libraries, admits Tiger Den won’t appear overnight: “There’s lots that we will have to build on over time,” he says. “I don’t know that we’re going to get everything we want all at once.”

Stewart is nonetheless psyched for what he and others in his field consider a huge culture shift for the university.

“LSU is making a big statement here,” Stewart says. “LSU’s saying ‘Your data is important to the university, and we’re going to back that up... by... backing it up!’”

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