The ICICLE team aims to build the next generation Cyberinfrastructure (CI) to render Artificial Intelligence (AI) more accessible to everyone and to drive its democratization further in solving larger societal problems. It is with great pleasure that we announce 2024-06 release of ICICLE CI components. This release includes the following components:

New to ICICLE CI Catalog

**Software Architecture and Design**

- TapisUI v1.6.0: Brand new dashboard to managing Tapis APIs with authentication and usability features. Use TapisUI to create and manage your workflows, pipelines, pods, and other essential services you use for your research and work.

**Use Inspired Science**

Smart Foodsheds

- PPOD (Persons-Projects-Organizations-Datasets) Core v0.5.0: A LinkML schema describing the core elements of PPOD (Person-Project-Organization-Dataset) information

ICICLE CI Components Changelog

**Software Architecture and Design**

Tapis Pods Service v1.6.0

New Features:

- Added local_only protocol in pods networking.
- GPU support within resources attributes.

Bug Fixes

- Pinned templated Postgres version.
- Harden t init for startup.

The ICICLE team is committed to delivering the best software and CI components. We welcome your feedback and suggestions for future releases. A list of all ICICLE components can be found on our website under CI & Software. Please subscribe to icicle-discuss and post to discuss all installation/build problems, performance issues, features and other miscellaneous questions related to the different software and CI components of the ICICLE project. You are welcome to post patches and enhancements to the released components. Subscribe to our mailing list & icicle-announce to stay up to date on the latest ICICLE news and releases.

Acknowledgements

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Professor Laura Schmidt from University of California, San Francisco and Dr. Amarnath Gupta from the San Diego Supercomputer Center presented NSF Convergence Accelerator Track J Award entitled “NOURISH, the Network Of User-Engaged Researchers building Interdisciplinary Scientific Infrastructures for Healthy food” at the ICICLE Seminar Series.

Click here to view the recording.

ICICLE and Iowa State University of Science and Technology on behalf its Center for Wireless, Communities and Innovation (WiCI) sign an academic collaboration agreement to use data movement pipeline from drone to edge device, drone to cloud & edge to cloud for the Digital Agriculture project and integrate ARA wireless living lab with a national cloud platform (e.g., Chameleon) to support end2end CI integration.
The Intelligent Cyberinfrastructure with Computational Learning in the Environment (ICICLE) Educational Fellowship Program is pleased to announce its 2024 cohort, highlighting the continuous efforts to democratize artificial intelligence (AI) by making it more accessible and beneficial to all. The 2024 cohort — Lucas Borges dos Santos, Huiying “Fizzy” Fan, John Myers, Rosemarie Santa González, and Emily Steliotes — brings together an impressive array of scholars and researchers committed to applying innovations in the uses and application of AI and cyberinfrastructure for the betterment of humankind.

“The 2024 program theme is centered on the use of pioneering AI-enabled cyberinfrastructure and knowledge systems in support of increased resiliency of food systems,” said Dr. Beth Plale, co-principal investigator of the ICICLE Project and executive director of the Indiana University Pervasive Technology Institute. “In harnessing the power of AI to fortify and democratize our food systems, we cultivate not just crops, but innovation, sustainability, and abundance for everyone,” added Plale, who is also the Michael A. and Laurie Burns McRobbie Bicentennial Professor of Computer Engineering at Indiana University. “It's not just about pushing the bounds of nature or increasing yields; it's fundamentally about amplifying our ability to nourish the world.”

Learn more about the 2024 Cohort, their mentors and projects here.
The SGX3 Fellowship, funded by the Cyberinfrastructure Center of Excellence under NSF award #2231406, is more than just a program—it's a supportive community. This fellowship offers graduate students the chance to work at the Texas Advanced Computing Center (TACC) during the summer, engaging in hands-on projects related to gateway development, software engineering, and high-performance computing. It provides a stipend, meal provisions at The University of Texas at Austin, and travel arrangements facilitated by TACC. The fellowship aims to enhance students' skills in Python programming, Docker/containerization, and Linux/Unix environments, with exposure to production science gateways like the Frontera User Portal and DesignSafe Science Gateway. The mentorship by TACC staff, social activities, and opportunities for professional development and research publication make it a valuable experience for advancing careers in computational science and engineering. Participants can also publish portals or posters at the annual conference Gateways 2024, held from October 8 to October 10, 2024, in Bozeman, MT, with online tutorials preceding the conference.
Gateways 2024 focuses on science gateways, which are user-friendly interfaces facilitating access to complex research infrastructures like computing, data resources, and instruments for research and education. These gateways, also known as research portals or virtual research environments, support diverse communities by showcasing teaching tools, empowering research initiatives, and fostering technology adoption. The conference aims to enhance collaboration across academia, industry, and the public, emphasizing expanding horizons in science gateways. The program includes tutorials, presentations, panels, posters, demos, and a BYOP session (Bring Your Own Portal), providing ample opportunities for networking and knowledge sharing among users, developers, and providers in the community.

Three ICICLE NextGens, Sowbaranika Balasubramaniam, Beulah Karrolla, and Swathi Vallabhajosyula, received information and applied for the fellowship through the ICICLE network and are currently working under the supervision of Dr. Joe Stubbs and Tracy Brown.
"I'm Sowbaranika Balasubramaniam, a graduate student in Computer Science Engineering at The Ohio State University. I learned about the SGX3 fellowship through Dr. Stubbs and ICICLE emails. Working with ICICLE has been rewarding, opening new opportunities for me. I'm thankful for their support. So far, the SGX3 fellowship is going well. I've met my team, connected with professionals, and learned about Tapis UI and Tapis pods. Even though it's only been a few days, I've been learning a lot." - Sowbaranika Balasubramaniam

"I am Swathi Vallabhajosyula, a 5th-year Ph.D. student under the mentorship of Dr. Rajiv Ramnath at The Ohio State University, Department of Computer Science and Engineering. My tech journey, from using MS Office in middle school to developing voice bots, has guided me to cutting-edge research. During my undergraduate studies, I explored driver behavior analysis using phone sensors, aligning with the data-driven approach of the SGX3 fellowship. In my Master's, I delved into Natural Language Processing, crucial for intelligent systems, a core focus of SGX3. Now in my Ph.D., I'm developing intelligent research assistants for scientists, echoing the interdisciplinary scope of SGX3.

Last summer's SGX3 fellowship reignited my programming passion after a research-intensive phase. It introduced me to essential TAPIS components for advancing in year 3 ICICLE projects. I'm excited to return, concentrating on ICICLE software releases and integrating Smart Scheduler (RIISS) with TAPIS for deployment and demonstration in an ICICLE user-inspired use case featuring MegaDetector. This year's fellowship has been fulfilling. The previous experience gave me a head start, and I've enjoyed assisting others in their transitions. The pleasant Texas weather is a bonus – no scorching triple-digit heat yet! To enhance ICICLE components' user-friendliness, we aim to develop more APIs and simplify the learning curve, necessitating a full-stack developer skillset. It's invigorating to revisit JavaScript, especially witnessing its evolution since my initial exposure in 2010." - Swathi Vallabhajosyula
"My name is Beulah Karrolla, and I am a recent graduate from Ohio State University, where I earned my Master's degree in Computer Science and Engineering with a research focus on speech processing and multi-modal alignment under Dr. Eric Fosler-Lussier. I hold a Bachelor's degree in Computer Science and Engineering from CBIT, India, and previously worked as an Application Developer at Oracle for the TPM Application. I first learned about the SGX3 fellowship through an email from Neelima and was later recommended by my advisor, Dr. Eric Fosler-Lussier. ICICLE has been crucial in my academic and professional development, providing invaluable mentorship and resources. The guidance from ICICLE, specifically from the IKLE project team, has been pivotal in shaping my research direction towards multi-modal alignment and enhancing my skills in zero-shot speech classification for making 'Hello ICICLE' wake word for our ICICLE applications.

My experiences with the SGX3 fellowship have been enriching so far. The fellowship has offered me unique opportunities to collaborate with leading experts, gain hands-on experience, and contribute to cutting-edge research projects. It has been a transformative experience that has broadened my horizons and solidified my passion for high-performance computing and research with plug-and-play architecture to integrate various APIs into a production pipeline. This experience is helping me strengthen my technical abilities, hone my problem-solving skills, and work effectively in a team setting. This is a fantastic bridging opportunity for learning and brushing up on basics before joining a full-time technical position." - Beulah Karrolla
ICICLE TIPS ON AI ETHICS

A series of short videos that situates AI Ethics in an accessible, tip-oriented manner. The series is motivated by the belief that *forethought about ethical implications can create better outcomes*. Check out the tips listed below -

- **TIP #1**: Remember that AI is not inevitable.
- **TIP #2**: Recognize that our responsibility is to the positive outcomes we work towards.
- **TIP #3**: Dimensions of Privacy
- **TIP #4**: Fairness – focus on stakeholders and use-inspired science
- **TIP #5**: Trustworthiness – what does it take to trust AI and cyberinfrastructure?
- **TIP #6**: Accountability – provides mechanisms for evaluating trustworthiness
- **TIP #7**: AI democratization in ICICLE

Browse all Tips for AI Ethics [here](#)

ICICLE TIPS ON ALLYSHIP

The Broader Impact Backbone Network team has created tips in video format on how we, here at ICICLE, can become better allies to promote an aware, inclusive, and more diverse community

Browse all Tips for Allyship [here](#)
- Duy Le, Shaochen Zhong, Zirui Liu, Shuai Xu, Vipin Chaudhary, Kaixiong Zhou and Zhaozhuo Xu, “Knowledge Graphs Can be Learned with Just Intersection Features”, Forty-first International Conference on Machine Learning (ICML), Vienna, Austria, July 21, 2024

- Shaochen Zhong, Duy Le, Zirui Liu, Zhimeng Jiang, Andrew Ye, Jiamu Zhang, Jiayi Yuan, Kaixiong Zhou, Kaixiong Zhou, Zhaozhuo Xu, Jing Ma, Shuai Xu, Vipin Chaudhary and Xia Hu, “GNNs Also Deserve Editing, and They Need It More Than Once”, Forty-first International Conference on Machine Learning (ICML), Vienna, Austria, July 21, 2024

- Abdullah Caglar Oksuz (Case Western Reserve University), Anisa Halimi (IBM Research - Dublin), and Erman Ayday (Case Western Reserve University),”AUTOLYCUS: Exploiting Explainable Artificial Intelligence (XAI) for Model Extraction Attacks against Interpretable Models” accepted at the 24th Privacy Enhancing Technologies Symposium, July 2024.


- Alfonso Morales, "Farm2facts: Results, Opportunities and Needs in AI and CI for Direct Market Farming and Farmers Markets", presented at the Microsoft Research Seminar, June 2024


Click here to view all ICICLE Presentations and Publications
The following mailing lists are available for ICICLE software and cyberinfrastructure releases, future updates and miscellaneous questions regarding installation/build problems, performance issues.

- **icicle-announce**: This is an announcement list only. If you would like to get information about future updates, software and cyberinfrastructure releases, publications, etc. related to the ICICLE project, you may subscribe to this mailing list. This list is open to public. You are welcome to subscribe to this mailing list yourself.

- **icicle-discuss**: This is a discussion list. This mailing list is meant for users to discuss all installation/build problems, performance issues, features and other miscellaneous questions related to the different software and cyberinfrastructure components of the ICICLE project. In order to post your questions and suggestions to this mailing list, you need to be a registered user of ICICLE with an organizational e-mail address and be a member of this list by subscribing to it with the same e-mail address. If you are not a registered user, please follow the procedure indicated under Download tab in the top menu to get registered.

We welcome your interest to partner with ICICLE! Please complete this [form](#) and we’ll reach out to you.