



ICICLE RELEASE 2024.01

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 the 2024-01 release of ICICLE CI components. This release includes the following components:

New to ICICLE CI Catalog

Intelligent Cyberinfrastructure, AI for CI-for-AI

Iluvatar Functions as a Service (FaaS) Control Plane v1.0.0

Iluvatar is an open Serverless platform built with the goal of jumpstarting and streamlining FaaS research. It provides a system that is easy and consistent to use, highly modifiable, and directly reports experimental results.

ICICLE CI Components Changelog

Intelligent Cyberinfrastructure, Software Architecture and Design

Tapis Federated Authentication Service v1.5.0

New features

- Tenants are now able to determine how long the MFA authentication should last before the user has to re-enter their MFA. Updated HTML - all of the different pages of the authentication workflow now have updated design layouts.

Bug Fixes

- The device code flow, starting with GET /v3/device?client_id=, is now working for all login methods. The language for the user code form of the device flow is now more clear

Tapis Pods Service v1.5.3

Breaking Changes

- Implemented direct access to NFS server instead of routing through Files for volumes/snapshots. This solves occasional networking hiccups causing troubles when Files couldn't be accessed. This solves deployment across multiple namespaces as Files access was a stickler.
- Health is now split into health and health-central. Health-central deploys with the main stack. It takes care of metrics, traefik management, and NFS management. Health deploys with computer (health and spawner) in whatever namespace, takes care of Kubernetes health and management in a particular namespace.
- New deployment files for the above features along with deleting no longer used files. Works locally as well.
- Fix in traefik to properly throw a 500 so proxy backup in nginx works properly when no location is matched.

New features

- Added health deployment that doesn't restart, allowing for easier debugging.
- Improvements to NFS permissions.

Bug fixes

- Improvements for health regarding processes when new tenants are created while already running.

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

This release is brought to you by the National Science Foundation (NSF) funded AI institute for Intelligent Cyberinfrastructure with Computational Learning in the Environment (ICICLE) (OAC 2112606).

LANDWERX COLLABORATION EVENT

Neelima Savardekar and Luke Waltz attended two collaboration events hosted by the LANDWERX innovation hub (<https://www.landwerx.org/>). LANDWERX started in the last 6 months and is an extension of the DEFENSEWERX Hub. LANDWERX is located at the Landus Innovation Connector in Des Moines, Iowa. Landus is an ag cooperative in Iowa with 62 locations and revenue of \$2.4B in FY2023. As an Innovation Hub, LANDWERX aims to bridge the gap between innovative technologies and traditional farming practices.

The first day on December 5th was focused on drones in agriculture and the second day on December 6th was focused on data aggregation in agriculture. Total attendees was about 20 each day with roughly 75% of attendees attending both days. The attendees were a mix of farmers, smaller agtech companies, military contractors, and academia. Each day consisted of breakout groups that brainstormed relevant problems, potential solutions, and blue-sky proposals that would advance the state of the art.

One common theme was the dissatisfaction with the state of data in agriculture and how the lack of visibility to the data hinders farmers from making optimum decisions. While there were no actionable solutions arrived at in these events, it was a great opportunity for engaging conversations and hopefully will lead to meaningful collaborations that deliver valuable solutions for farmers.



ICICLE NEXTGENS ACTIVITIES

Sowbaranika Balasubramaniam, Joe Stubbs, Richard Cardone, Christian R. Garcia, Gregory J. Lipps, Bill Peterman, Wei-Lun Chao, Chuck Stewart, Tanya Berger-Wolf, "Optimizing Species Classification from Camera Trap Images: A Hybrid Approach with Deep Learning Techniques and Human Review"

has been chosen for oral presentation at the Edward F. Hayes Advanced Research Forum.

The 38th Hayes forum is a prestigious event to showcase groundbreaking research conducted by Ohio State graduate students and postdoctoral scholars, fostering valuable exchanges among students, scholars, and the wider community that provides a platform.

Abstract: [Link](#)



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](#)

RECENT PRESENTATIONS & PUBLICATIONS

- Dhabaleswar K. (DK) Panda, Creating Intelligent Cyberinfrastructure for Democratizing AI: Overview of the Activities at the NSF-AI Institute ICICLE, Indian Institute of Technology (IIT)-Bhubaneswar, India, Jan 2, 2024.
- Kevyn Angueira Irizarry and Christopher Stewart, "Poster: Profiling Edge Resource Demands of Zoom Maneuvers for Autonomous Unmanned Aerial Vehicles", December 2023.
- Cheng-Hao Tu, Hong-You Chen, Jike Zhong, Zheda Mai, Vardaan Pahuja, Tanya Berger-Wolf, Song Gao, Charles Stewart, Yu Su, Wei-Lun Chao, "Holistic Transfer: Towards Non-Disruptive Fine-Tuning with Partial Target Data", In the Conference on Neural Information Processing Systems (NeurIPS'23), December 2023.
- Nawras Alnaasan, Matthew Lieber, Amir Shafi, Hari Subramoni, Scott Shearer, and Dhabaleswar K Panda, "HARVEST: High-Performance Artificial Vision Framework for Expert Labeling using Semi-Supervised Training", 2023 IEEE International Conference on Big Data, December 2023.
- Chang-You Tai, Ziru Chen, Tianshu Zhang, Xiang Deng, Huan Sun, "Exploring Chain-of-Thought Style Prompting for Text-to-SQL", In the Conference on Empirical Methods in Natural Language Processing, December 2023 (EMNLP' 23)
- Shijie Chen, Ziru Chen, Huan Sun, Yu Su, "Error Detection for Text-to-SQL Semantic Parsing", In the Findings of the Conference on Empirical Methods in Natural Language Processing, December 2023 (EMNLP' 23: Findings).
- Kai Zhang*, Lingbo Mo*, Wenhui Chen, Huan Sun, Yu Su, "MagicBrush: A Manually Annotated Dataset for Instruction-Guided Image Editing", In the Conference on Neural Information Processing Systems (NeurIPS'23), December 2023 .

Click [here](#) to view all ICICLE Presentations and Publications

SUBSCRIBE TO ICICLE MAILING LISTS

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.

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