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Bringing your favorite bioinformatics analysis tools to cyverse using docker

CyVerse (formerly iPlant Collaborative) is a life sciences cyberinfrastructure funded by the National Science Foundation (NSF). The infrastructure's purpose is to scale science, domain expertise, and knowledge by providing a variety of computational tools, services, and platforms for storing, sharing, and analyzing large and diverse biological datasets. The Discovery Environment (DE) in CyVerse specifically provides a modern web interface for running powerful computing, data, and analysis applications. By providing a consistent User Interface (UI) for accessing applications and computing resources needed for specialized scientific analyses, the DE facilitates data exploration and scientific discovery. DE merges the "science gateway" functionality and the bioinformatics "workbench" with high-performance data management to allow seamless access to reusable computational workflows that can run at very large scales. It is common in bioinformatics to build new analysis methods utilizing multiple programs, libraries, and modules. However, each analysis that uses these tools requires specific versions of the operating system and underlying software. Docker is a container virtualization technology that wraps a bioinformatics tool (e.g BWA) together with all its software dependencies so it can run in a reproducible manner irrespective of enviroment. This workshop will teach users how to install Docker, write a Docker file for their bioinformatic tool of interest, build the Docker image containing the tool, test the built Docker image, submit a tool request, build the new app UI in the DE and finally test their web app and share it with their collaborators or make it public so that other users can use it.

Biography

Upendra Kumar Devisetty earned his PhD from University of Nottingham, UK and completed Post-doctoral studies at the University of California Davis and Oregon State University. He is currently working as Science Informatician at CyVerse, a life sciences cyberinfrastructure funded by the National Science Foundation (NSF). He has published more than 10 papers in peer-reviewed journals and has been invited to speak at several international conferences.

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Page 36