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BL@SCALE: SCALING TECHNOSIGNATURE SEARCH PIPELINES TO THE CLOUD

Abstract

Breakthrough Listen (BL) is the most comprehensive, intensive, and sensitive search for extraterrestrial intelligence to date. With instruments deployed at telescopes around the world, data rates from BL's technosignature search are enormous. Technosignature pipelines have been deployed at the telescope sites, as well as at the UC Berkeley data center, but the limitations of an on-premise, hardware-centric approach constrain our ability to ramp up intensive analysis campaigns on demand.

We present BL@Scale, a new approach, using modern cloud technologies like Docker and Kubernetes to build infrastructure that is able to flexibly scale with our computing demands. BL@Scale seeks to integrate our existing on-premise infrastructure with the cloud to build a hybrid cloud platform that is able to economically handle our everyday workloads using on-premise machines while being able to expand to large workloads quickly in the cloud. With these technologies, we also aim to abstract away the complexities of the cloud such as resource allocation and system administration.

Our vision is this: a performant, user-friendly platform that allows researchers to run, monitor, and view the results of their algorithms on large datasets at the click of a button.

BL@Scale is currently in a pilot phase but our goal is to make the BL surveys more effective and scalable than ever before.

I will report on the capabilities of BL@Scale, the structure of our platform, and some of our most recent advances.