CS491 - Fall 2025 - Project Information Form

CASSIE
Cloud-based Assembly Streamlined Service Integration Engine

1. Description

We aim to develop a cloud-based genome assembly and annotation platform that streamlines and automates every stage of genomic data analysis. Our platform automates entire workflows from data upload to genomic analysis. The researchers will upload their sequencing data, select appropriate tools and execute complex pipelines within isolated environments on virtual machines. This multi-tenant system will simplify large-scale genomic analysis, by integrating Docker for containerization, Kubernetes for orchestration and Nextflow for workflow automation; it delivers scalability, reproducibility, and cost efficiency at cloud scale. In short, our aim is to allow a broader range of researchers to efficiently perform complex genome assembly and annotation tasks without the need for a deep understanding of the underlying computational infrastructure.

2. Supervisor and Innovation Expert

2.1 Supervisor

Can Alkan, Bilkent University

2.2 Innovation Expert

Can Alkan, Bilkent University

3. Project Web Page

https://justsignedupayy.github.io/cassie-pages/

4. Team Members

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