

Summary of Initial Technical Work

We began the GAINS application development by focusing on the **frontend design and user experience**. Using **Next.js and React**, we structured the core user interface components, including the homepage, login page, tool dashboard, data input forms, results display, and code viewer. We prioritized accessibility, responsive design, and intuitive navigation to make the system easy to use for students and researchers with varying levels of technical expertise. After finalizing the initial frontend architecture, we pushed the codebase to **GitHub** to establish version control and enable collaborative development.

Currently, we are working on the **backend implementation and integration**. Using **Node.js and Express**, we are developing backend controllers and services to support authentication, dataset management, and statistical analysis requests. We are also linking the backend to **MongoDB** for persistence and setting up the **R execution service** to automate statistical analysis tasks.

At the same time, we are actively **testing both the frontend and backend** as we progress. By testing incrementally, we are able to identify and fix compatibility issues early, ensuring that user workflows, such as uploading datasets, selecting tools, and generating R code, function smoothly. By combining our completed frontend structure with ongoing backend development and continuous testing, we are steadily moving toward a functional prototype of the GAINS system.

GAINS TEAM

MURAT, YAROSLAV, BRADEN, KEVIN, JONATHON