

Ogabek Rakhimov

Full-Stack Application Scaffold & Project Infrastructure

Frontend Development (React)

- Architected the core frontend using React Router v6, implementing protected routes and a centralized AuthProvider.

- Developed a secure JWT-based authentication system with in-memory state management. Configured Axios interceptors to handle automatic token attachment and 401 redirects.

- Built out modular UI components including a responsive sidebar, navigation shell, and specialized data displays like the RiskBadge and StatCard.

- Designed and implemented high-impact pages: Dashboard (with BarCharts), searchable Patient tables, Trends (line charts and SHAP bars), and a lab Calculator with full validation.

- Streamlined deployment with multi-stage Docker builds optimized for Nginx.

Backend Development (FastAPI)

- Set up the FastAPI backend with four main routers (Auth, Patients, Predict, Dashboard) and CORS middleware.

- Engineered the security core using Bcrypt for password hashing and JWT for session verification.

- Integrated SQLAlchemy for asynchronous database operations and defined all Pydantic request/response schemas.

- Built the ML service layer, incorporating the CKD-EPI eGFR formula and SHAP value formatting for model explainability.

Infrastructure & Repository Setup

- Orchestrated the environment using Docker Compose to synchronize Postgres, the backend, and the frontend.

- Authored comprehensive project documentation, including a 6-sprint plan, system architecture diagrams, and clinical requirements for doctor workflows.

- Established the repository structure and baseline artifacts for the Capstone prototype.