# BIOF3003 Digital Health Technology - Frontend Assignment

This is the frontend application for the BIOF3003 Digital Health Technology course assignment. It includes a user panel, camera feed, and data visualization features.

## Features

* User panel for managing user information
* Camera feed integration
* Historical data visualization using charts
* MongoDB integration for data storage
* Backend API for data processing and storage

## Prerequisites

* Node.js (v18 or later)
* MongoDB (local or Atlas)
* npm or yarn
* Python 3.8 or later (for backend)
* pip (Python package manager)

## Installation

1. Clone the repository:

git clone <repository-url>  
cd heartlens-frontend

1. Install frontend dependencies:

npm install  
# or  
yarn install

1. Install backend dependencies:

cd heartlens-frontend/biof3003-backend  
# Clean any existing node\_modules  
rm -rf node\_modules package-lock.json  
# Install dependencies  
npm install  
# or  
yarn install

1. Create a .env.local file in the frontend root directory with:

MONGODB\_URI=your\_mongodb\_connection\_string

1. Create a .env file in the backend directory with:

MONGODB\_URI=your\_mongodb\_connection\_string  
PORT=3003

## Running the Application

### Backend Setup

1. Navigate to the backend directory:

cd heartlens-frontend/biof3003-backend

1. Start the backend server:

npm run dev  
# or  
yarn dev

The backend will run on http://localhost:3003

### Frontend Setup

1. Open a new terminal window
2. Navigate to the frontend directory:

cd heartlens-frontend

1. Start the frontend development server:

npm run dev  
# or  
yarn dev

The frontend will run on http://localhost:3002

## Troubleshooting

If the application doesn’t start properly, check the following:

### Port Already in Use

If you see “Error: listen EADDRINUSE: address already in use” or similar: 1. Find the process using the port: bash lsof -i :3002 # For frontend lsof -i :3003 # For backend 2. Kill the process: bash kill -9 <PID> where <PID> is the process ID from the previous command

### Backend Issues

1. Verify you’re in the correct directory (heartlens-frontend/biof3003-backend)
2. If you see dependency errors:

* cd heartlens-frontend/biof3003-backend  
  rm -rf node\_modules package-lock.json  
  npm install

1. Ensure all backend dependencies are installed
2. Check that the MongoDB connection string in .env is correct
3. Verify port 3003 is not being used by another application
4. Check the terminal for any backend error messages

### Frontend Issues

1. Verify you’re in the correct directory (heartlens-frontend)
2. Ensure all frontend dependencies are installed
3. Check that the MongoDB connection string in .env.local is correct
4. Verify port 3002 is not being used by another application
5. Check the terminal for any frontend error messages

### Common Issues

1. Make sure both frontend and backend are running simultaneously
2. Verify that MongoDB is running and accessible
3. Check that Node.js v18 or later is installed
4. Ensure all environment variables are properly set
5. Check network connectivity between frontend and backend

## Project Structure

heartlens-frontend/  
├── biof3003-backend/ # Backend server  
│ ├── src/ # Backend source code  
│ ├── models/ # Data models  
│ └── routes/ # API routes  
├── src/ # Frontend source code  
│ ├── app/ # Next.js app directory  
│ ├── components/ # React components  
│ ├── lib/ # Utility functions  
│ └── types/ # TypeScript definitions  
└── public/ # Static assets

## Technologies Used

### Frontend

* Next.js 14
* React 18
* TypeScript
* MongoDB
* Mongoose
* Chart.js
* Tailwind CSS

### Backend

* Node.js
* Express
* MongoDB
* Mongoose
* TypeScript
* ml-random-forest (for machine learning)
* fft-js (for signal processing)
* Custom peak detection algorithm

## License

This project is licensed under the MIT License.