CAPSTONE PROJECT 2024

GymGuru

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Nail Minnemullin Milana Sirozhova Liana Mardanova

· July 23nd 2024 ·

Problem

Two main problems we defined:

Fitness test:

only offline, may be no convenient time slots, no trainers attention to everyone

Online training:

the lack of a convenient application for training from home with tips on correct technique and supervision

GUMGURU

The idea of the product is to create a web application that allows:

① Pass fitness test remotely from any device with camera

② Improve the correctness of physical exercises performing

③ Train at home or in the gym at a convenient time without the need for professional supervision

Product functionality

What you can do using GymGuru

- Register / Login / Logout
- Train different exercises with supervision and score counting
- Pass fitness test
- See the history of your results
- See the rating of all users
- Load the spreadsheet of fitness test results (only for sport trainers)

GymGuru

Team members and their responsibilities

On the next slides we will present our team, members responsibilities and the implementation.

Role:

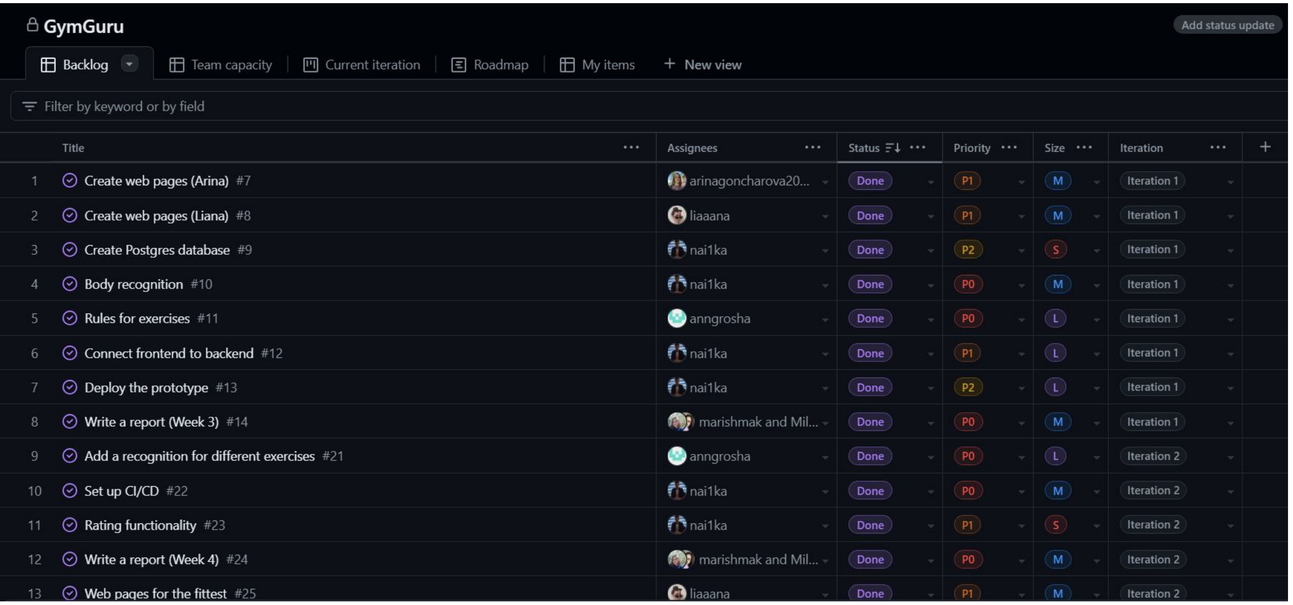
Team leader

Responsibilities:

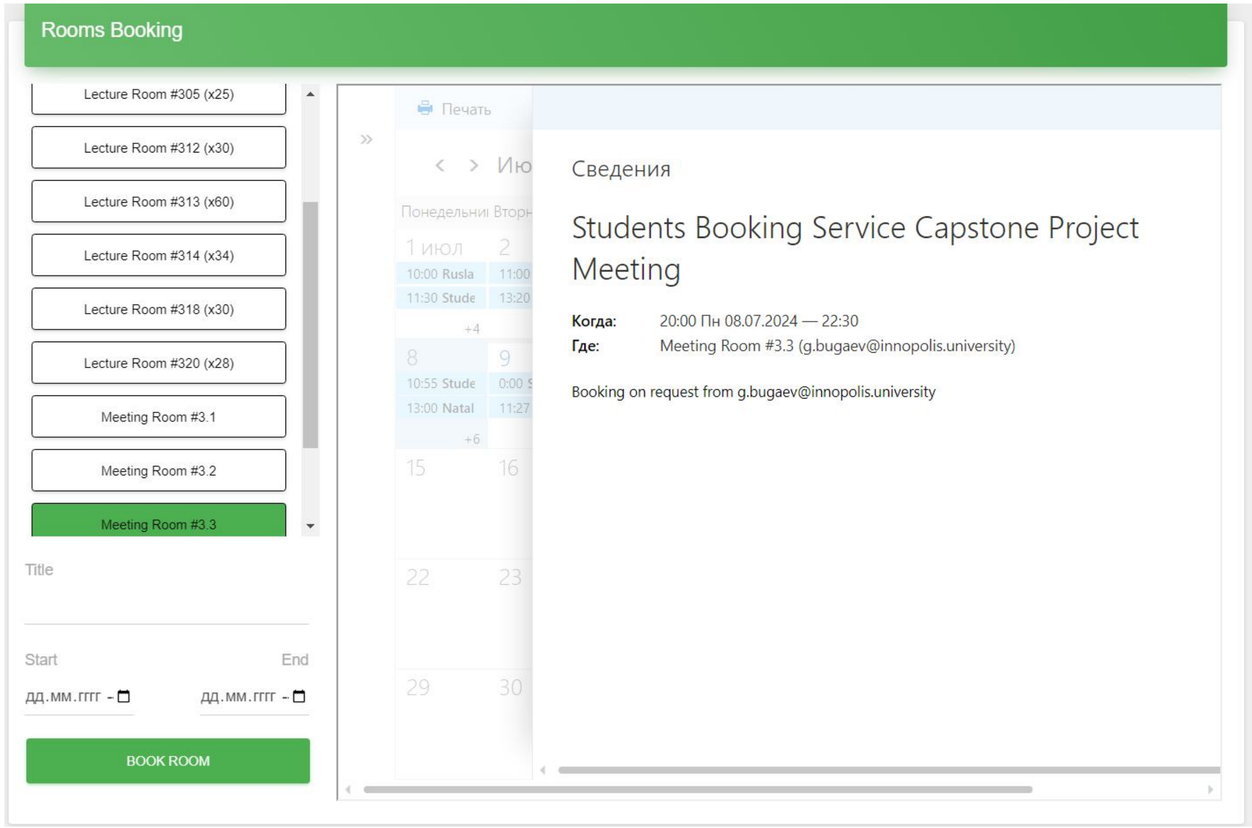
Product management, team organization, working process organization, backlog (GitHub Project)

Gleb Bugaev

Team leading and product backlog



	Title	Assignees	Status	Priority	Size	Iteration
1	Create web pages (Arina) #7	arinagoncharova20...	Done	P1	M	Iteration 1
2	Create web pages (Liana) #8	liaaana	Done	P1	M	Iteration 1
3	Create Postgres database #9	nai1ka	Done	P2	S	Iteration 1
4	Body recognition #10	nai1ka	Done	P0	M	Iteration 1
5	Rules for exercises #11	anngrosha	Done	P0	L	Iteration 1
6	Connect frontend to backend #12	nai1ka	Done	P1	L	Iteration 1
7	Deploy the prototype #13	nai1ka	Done	P2	L	Iteration 1
8	Write a report (Week 3) #14	marishmak and Mil...	Done	P0	M	Iteration 1
9	Add a recognition for different exercises #21	anngrosha	Done	P0	L	Iteration 2
10	Set up CI/CD #22	nai1ka	Done	P0	M	Iteration 2
11	Rating functionality #23	nai1ka	Done	P1	S	Iteration 2
12	Write a report (Week 4) #24	marishmak and Mil...	Done	P0	M	Iteration 2
13	Web pages for the fittest #25	liaaana	Done	P1	M	Iteration 2



Role:

Report writers

Responsibilities:

Writing the reports, diagrams creating, delivering the information from developers to the report readers

Mariia Shmakova

Milana Sirozhova

Reports writing

Developing the first prototype, creating the priority list

- **Technical Infrastructure**:

Before the working process of this week we organized all necessary technical infrastructure for convenient development process. We set up a GitHub Project with backlog, roadmap, milestones and issues to control features development process. Also, as a deployment platform we chose and rent a server with satisfactory parameters to maintain the main application logic and database. Of course, each team member has a software for the coding customized specifically for his/her preferences. In addition, since our team has 2 reporters, we creates a shared document for each report where all team members could see the progress in report writting and suggest any additions or recommendations.

- **Backend Development**:

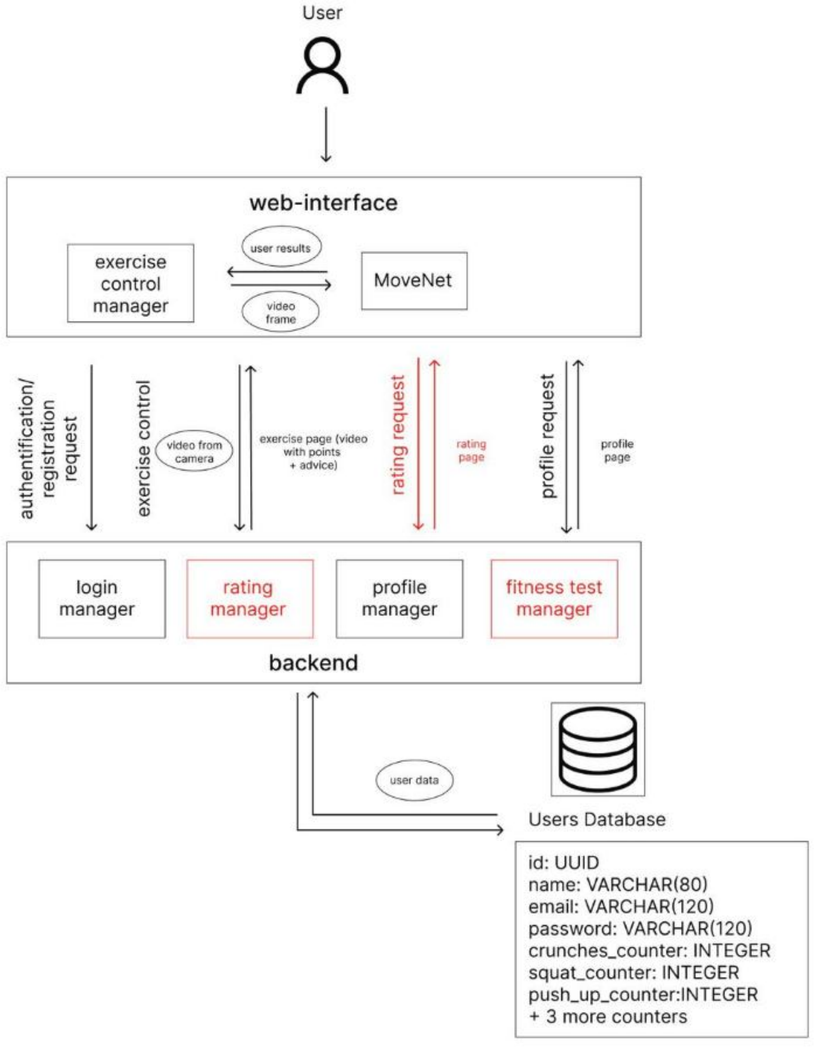
During this week our team was focused on the following tasks: recognition of a body by using MoveNet (pose detection model) was implemented, then correct execution checking was developed for some exercises. Moreover, we chose a domain name, rented a server and hosted our web application.

- **Frontend Development**:

As about our progress on frontend: we have finished with all important pages: main page, registration and login page, rating page with possibility to flipping through pages with exercises results, page with exercises, where user can click on the exercise preview and see the page with the video of a correct technique and can train with the help of video model assistant. Also, we have implemented a fitness test page, where users can see the necessary thresholds to pass for each exercise. The html was used to create the layout of the web pages and the Tailwind css framework contributed to quick and efficient styling.

Capstone Project

Team GymGuru



Role:

Frontend developers

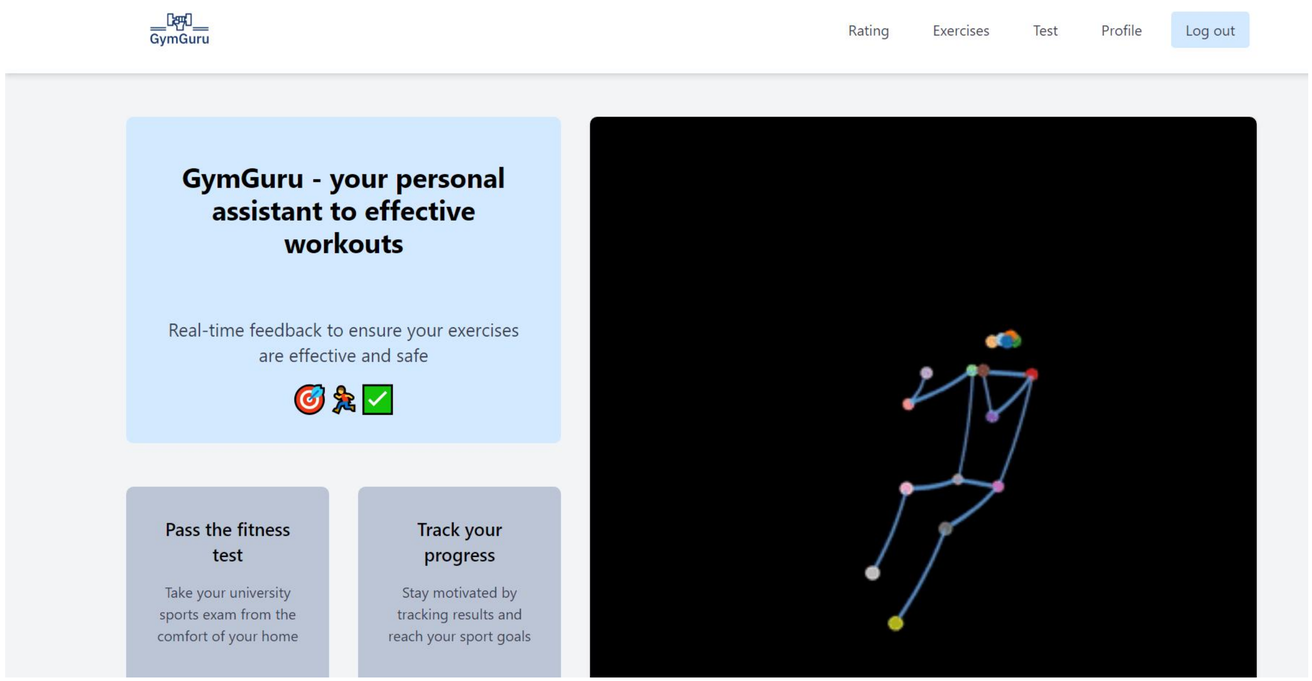
Responsibilities:

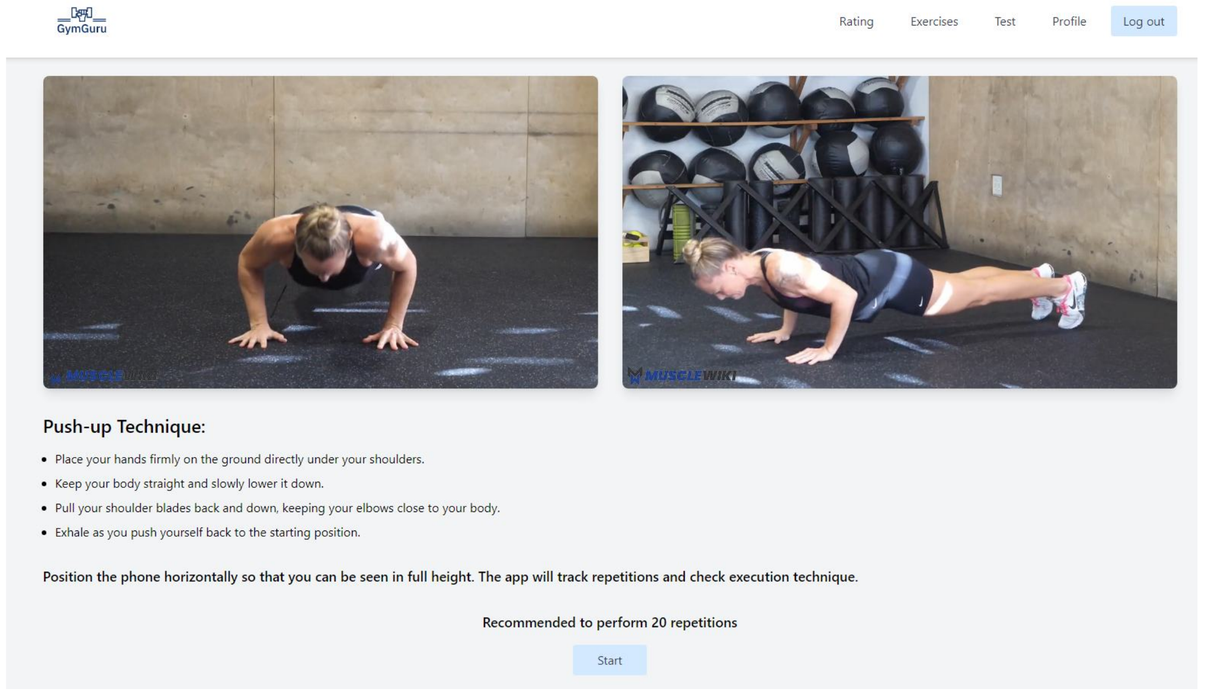
UI designing, web pages creating, development of all UI elements and transitions

Arina Goncharova

Liana Mardanova

UI


GymGuru
Rating
Exercises
Test
Profile
Log out
GymGuru - your personal assistant to effective workouts
Real-time feedback to ensure your exercises are effective and safe
🎯🏃✅
Pass the fitness test
Take your university sports exam from the comfort of your home
Track your progress
Stay motivated by tracking results and reach your sport goals


GymGuru
Rating
Exercises
Test
Profile
Log out
Push-up Technique:
Place your hands firmly on the ground directly under your shoulders.
Keep your body straight and slowly lower it down.
Pull your shoulder blades back and down, keeping your elbows close to your body.
Exhale as you push yourself back to the starting position.
Position the phone horizontally so that you can be seen in full height. The app will track repetitions and check execution technique.
Recommended to perform 20 repetitions
Start

Role:

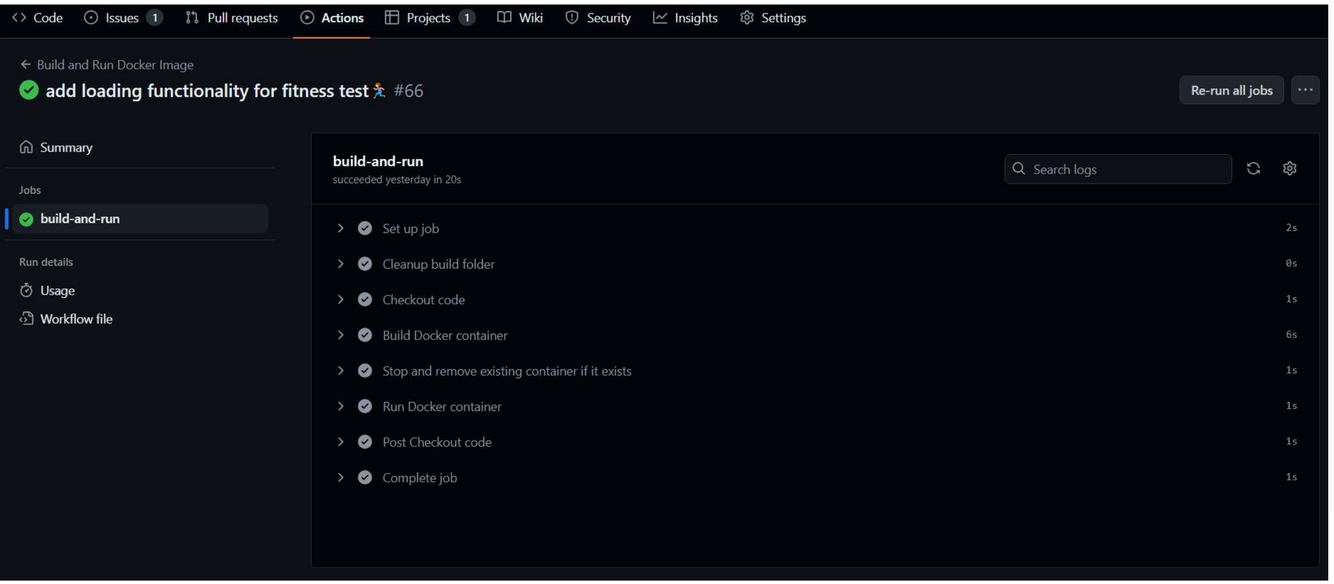
Backend developer

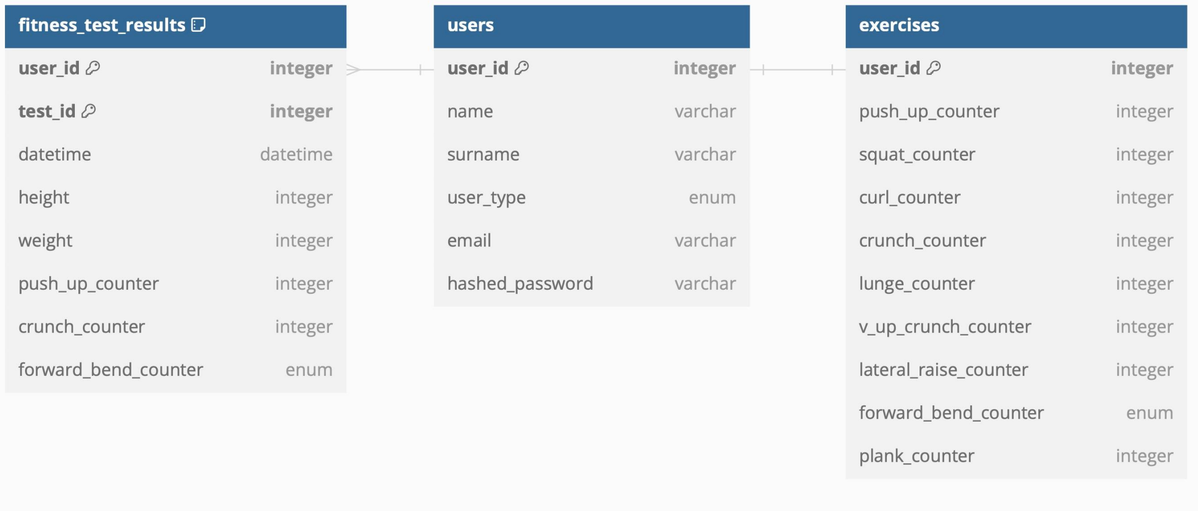
Responsibilities:

Database creating and management, backend and frontend connection, GitHub CI/CD, rating and fitness test functionalities

Nail Minnemullin

Database, backend functionality



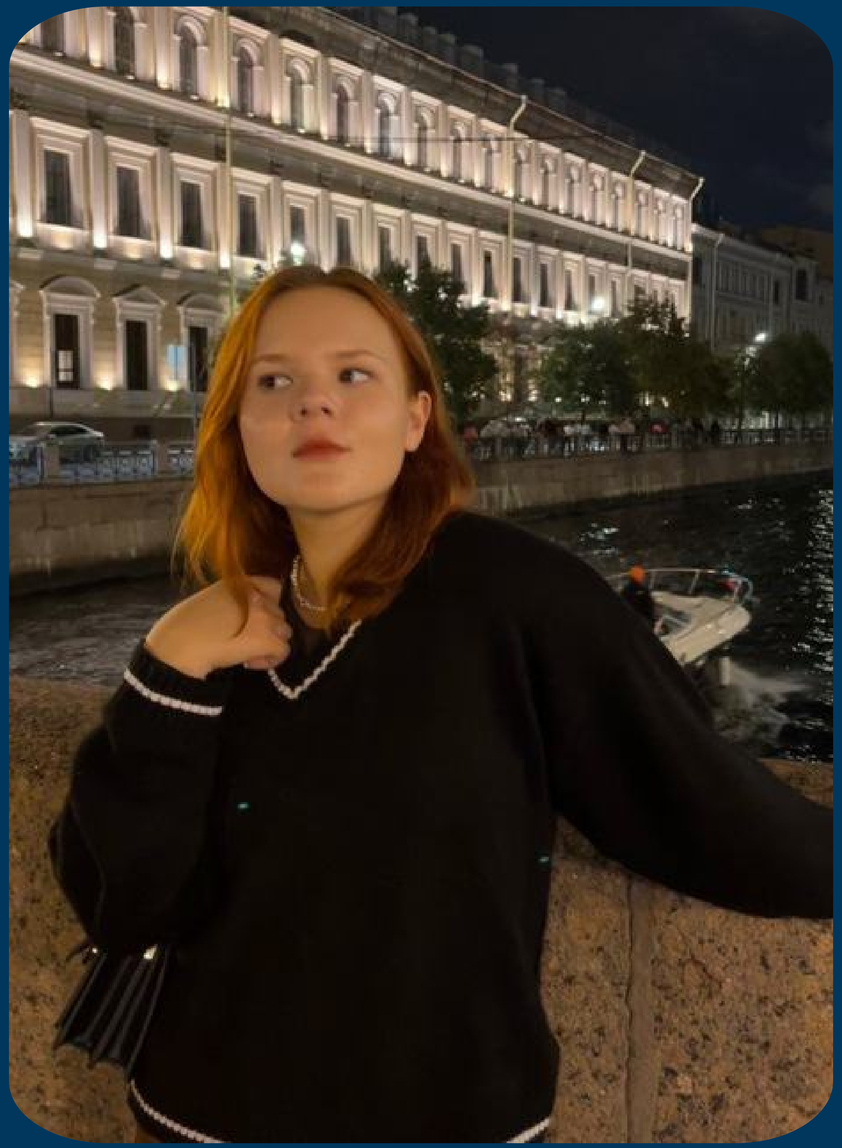


Role:

Backend developer

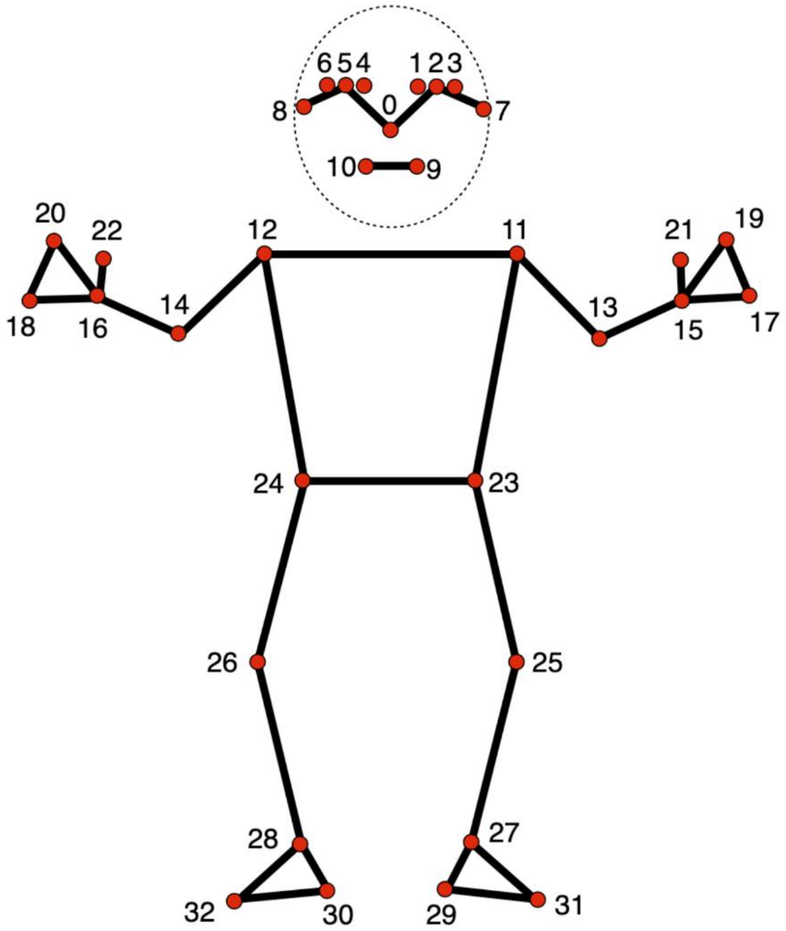
Responsibilities:

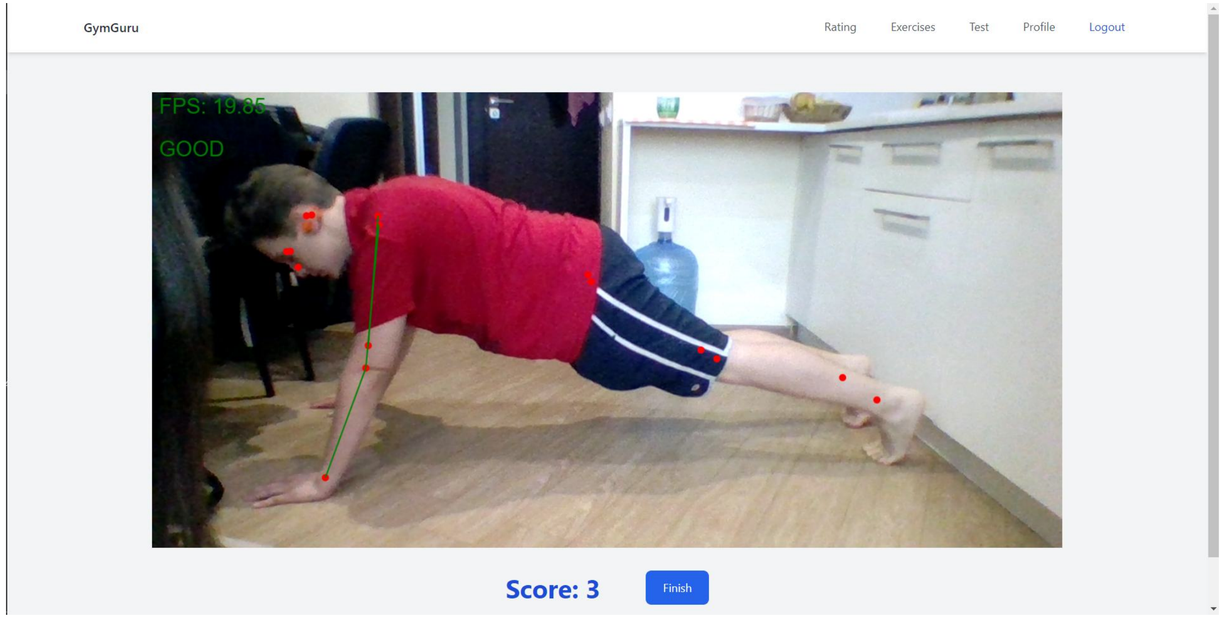
Body pose recognition, checking of the physical exercises performing correctness



Anna Gromova

Pose recognition, ML models and rules of checking the correctness





GYMGURU

Challenges and troubles

①

ML model choice

②

Tricks to deceive the checking system

③

Video processing on the client side

ROADMAP

Future development

WHAT WE LEARNED DURING THE COURSE:

Reflection

① GitHub Project organization and Actions (CI/CD and Runners)

② Integration of ML tool into client side of the application

③ Planning meetings with a large team (of 7 members)

Thanks from us

- We are grateful to all the students of Innopolis University who agreed to give us feedback during the product development process.
- Also, special thanks to Innopolis University sport coach Yana Bogdanovich for her professional opinion and valuable advice.

Web application link

HTTPS://GYMGU.RU/

Thanks!