



Cover page

Project title: BikeEmulator Academic Year: 2023/2024

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Project Type Software or Hardware (Choose one)

Supervisor Name:Dr. Anas Toma.....

Format:

- Single space, Times New Roman.
- 12 pt,
- Maximum 1 page.

Abstract Body:

Items must be provided in the Abstract:

- Why do you think this project is important? Please explain the significance of this Project in brief.
- In your point of view what are the important aspects that should be covered in the project?
- Objective(s): In your view, please explain the main objectives of the project.
- Methodology: Give a brief outline of the application development process.
- Had this project been done before? Are there any similar applications available today?
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- **Note:** Please deliver this abstract early to ensure that your Project has been approved by the department's projects committee. **Registration will not be done without this approval.**



Project's Abstract:

Biking is a widely popular sport that people enjoy. Yet outdoor cycling can be challenging especially in Palestine due to many obstacles like bad weather, dangerous roads, safety concerns triggered by occupation, or simply not feeling like going outside.

BikeEmulator is an enhanced bike that combines sport and entertainment, it provides the user with a complete outdoor cycling experience, but from the comfort of their home or a preferred location, featuring integrated drive emulation technology.

Our objectives for this project include enhancing the enjoyment of biking activities, enabling indoor cycling experiences, and delivering a complete outdoor riding experience.

We began the process with a normal bike that we fixed using a base we designed, connecting the bike to sensors, actuators and a controller. Using the readings from them we managed to make the experience more realistic. Laser and LDR sensors are used to determine the speed of the bike, another sensor is used to detect the direction of the steering, and stepper motors are used to control break and Shift cables.

The user will ride it like a normal bike, the actions performed will be mirrored into the drive simulation, data will be displayed on LCD screen for the user to view, it includes heart rate and the time spent playing. From a keypad the user can select the preferred play mode, there's also a flashlight feature if the user selects night mode in the game.

Combining drive simulation with stationary gym bikes already exists, but it doesn't provide a full experience like ours. In our bike, the user has the ability to steer left and right in the simulation, in addition to controlling braking actions.