



المسابقة الوطنية لشباب المبتكرين iClub Program 2024



STEM October 11th District
Giza

Bolt Team
Bolt



Team Members:

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Purpose of the project:

All the countries faces some problems this problems are called **challenges**; Egypt as all countries has challenges specially 11 challenges each challenge needs a solution. The **project challenge** is to generate energy, so the ball will be made to solve one of the challenges which is generating electricity from renewable resources around us as sunlight ,wind and water or actually from the people's activities, as in the **ball** that was built the mechanism depends on the motion of the **pendulum** that rotates the motor to transfer **mechanical energy** into **electric energy**.



The target category of the project:

- Sports Enthusiasts and Football Fans:** These people would be fascinated by the innovative aspect of generating electricity from a football.
- Technology and Innovation Enthusiasts:** People who follow emerging technologies, especially in renewable energy or sports tech, may find the idea of energy generation through motion or play particularly compelling.
- Sports Organizations and Teams:** Football clubs or leagues might be interested in the project to enhance their sustainability efforts, promote eco-friendly initiatives, or use it as a creative way to engage with fans.
- Tech Startups and Innovators:** Companies or individuals working in the fields of renewable energy, sports tech, or sustainable consumer products could be interested in collaborating or investing in such a project.
- Consumers of Eco-Friendly Products:** People who actively seek products that contribute to sustainability and reduce carbon footprints might be inclined to purchase or support the technology.



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The significance of the idea:

- The project solve the problem of **energy shortage** in Egypt as it allows us to benefit from a source of **renewable energy**.
- The project focuses on using the energy consumed during **playing football** by getting use of the rotation of the ball during playing. This mechanism allows a high- benefiting technique of the energy consumed during playing.



Methods :



1- Making the design of the ball and the mechanism box on blinder app.(as shown in fig.1-2-3)

2- Printing the design using Thermoplastic polyurethane (TPU) and 3-D Printer.
(as shown in fig.4).

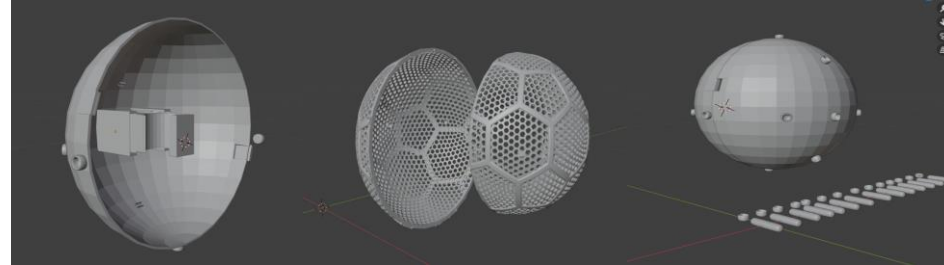


Fig.1

Fig.2

Fig.3

3- Sticking the pendulum on the motor and applying weight on the pendulum to decrease the back e.m.f

4-Connecting the motor to an electric bridge in order to unify the charge.



Fig.4

5- Adding tp4056 to the circuit to unify the output voltage.

6- Connecting this circuit to a lithium ion battery to store the electricity.

7- Adjusting this circuit in the box.(as shown in fig.5)

8- Another motor is added perpendicular to the first one to get use of four different directions.



Fig.5

Project working idea:

- 1- Generating electricity in general depends on a rotation of a magnet around a coil and vice versa.
- 2- Using this idea, by rotating a generator using the rotation force of the ball.
- 3- This process take place by using a pendulum to benefit from the rotation of the ball (as shown in fig.6).
- 4- When the ball starts moving the pendulum return back to its initial position by the force of inertia.
- 5- The rotation of the pendulum causes the generator to start rotating which eventually causes electric-generating.
- 6- Adding an electric bridge in order to benefit from both directions of rotation.
- 7- Adding a lithium ion battery to store the generated electricity.



Fig.6



Prototype:



Images and videos for the prior prototype



Fig.7
(final box)

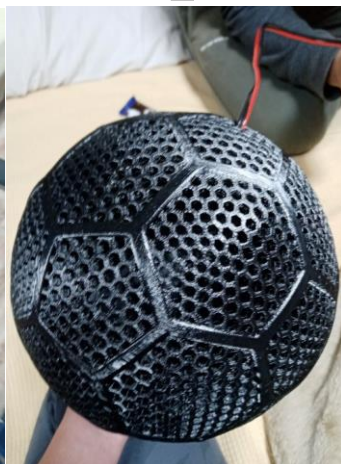


Fig.8
(final project)



Fig.9

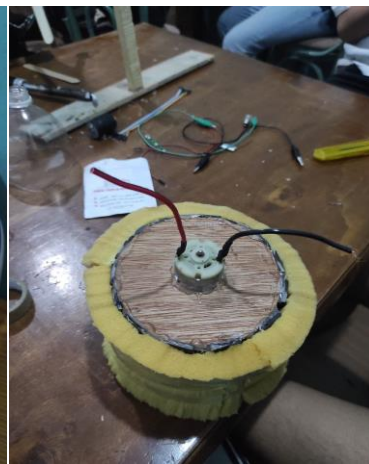


Fig.10

Final project testing video:

[https://drive.google.com/file/d/1gCTeg2ymxzazM-08Kg7DQ1D84reQ3ahn/view?usp=drive link](https://drive.google.com/file/d/1gCTeg2ymxzazM-08Kg7DQ1D84reQ3ahn/view?usp=drive_link)

Future development plan:



Solving the disadvantages of the project:

1- The weight of the ball:

- This will be solved by changing the design of the box to fit into the ball with the smallest shape to reduce the mass of it, and by using less supports during the printing of the ball to reduce its weight.

2- Using the help of factories to have a more efficient printing machines.

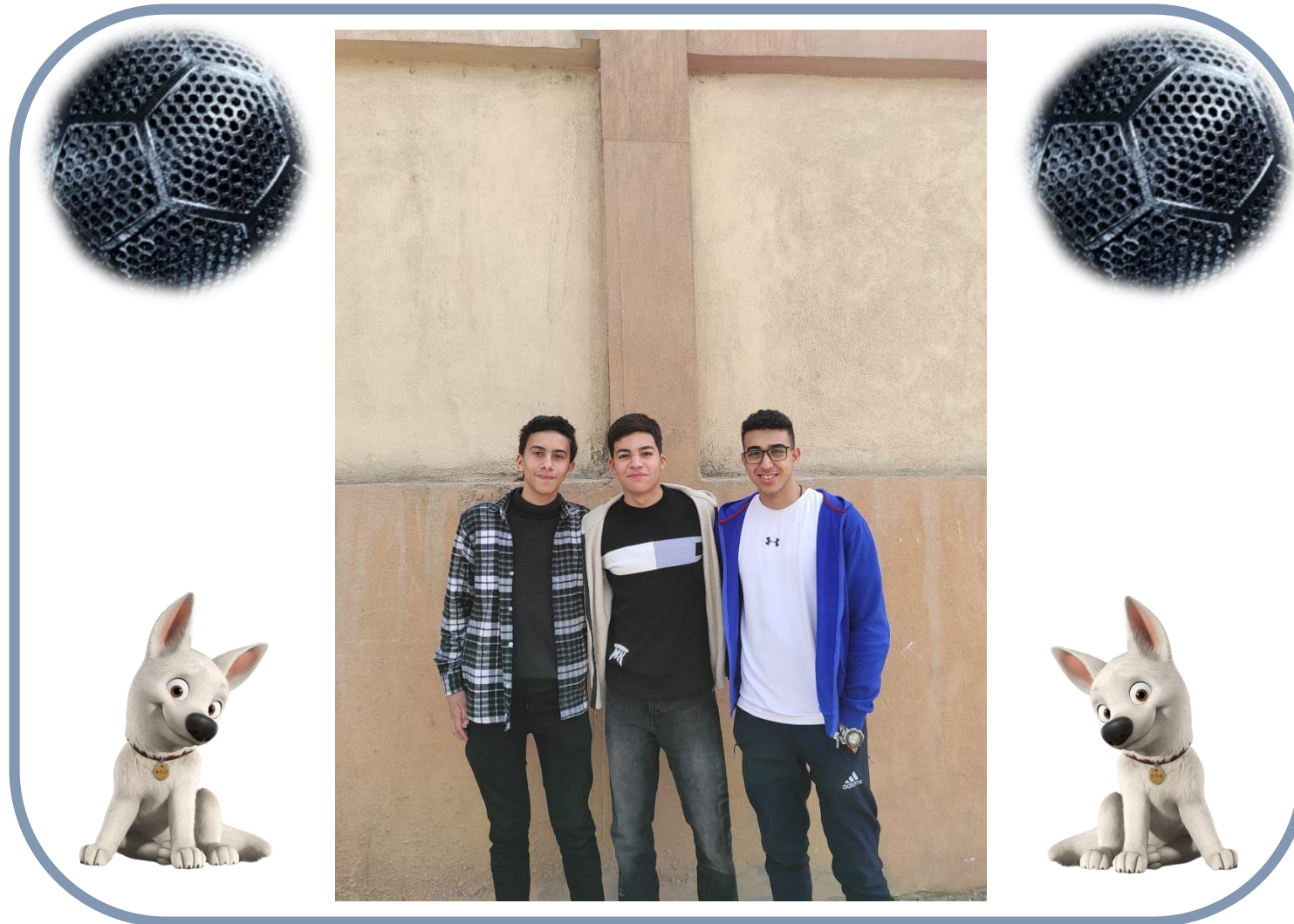
3-The relatively low electricity generating

- This will be solved by increasing the electricity generated by adding a gear box to the motor

4- To create a business model and plan for the project in order to make it a commercial product not only a project

- This will be achieved by the help of investors and businessmen.

Team Photo&Project Photo



**if Innovators
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