



# Gelāre Maneuvers

Team Gelāre Maneuvers for the **World Robot Olympiad 2022!**



# Who are we?

## Our Team:

We are a team of 3 incredibly motivated and passionate high school seniors with a strong background in Robotics and Machine Learning who aspire to work on innovative and practical methods to implement disruptive Robotic solutions at the intersection of Embedded Machine Learning.

Our team name, “Gelāre” stands for the latin term for gears and we believe that we can ‘Maneuver’ Gears with our touch of innovation and creativity to create an endless world of possibilities in Robotics.



# Who are we?

Our members:

- **Dhruv** possibly knows more types of development boards than the letters of the alphabet and is skilled with TinyML and Robotic Arms. He recently represented India and won 3rd Grand Award at ISEF.
- **Atharva** has a lot of experience in robotics competitions (2<sup>nd</sup> place IRC League Russia and Most Innovative Solution in WRS Japan) and can code in several different languages.
- **Pratham** is an experienced Python and JavaScript programmer who mainly works in the fields of machine learning and blockchain technology. He was chosen as one of India's 'young AI champions' in 2022 by Meta (formerly FaceBook).

We are based in Mumbai, India with an aspiration to not only win the olympiad, but take away a ton of skills and experience from entrepreneurship, technical capabilities and team-building.

# Who we are?

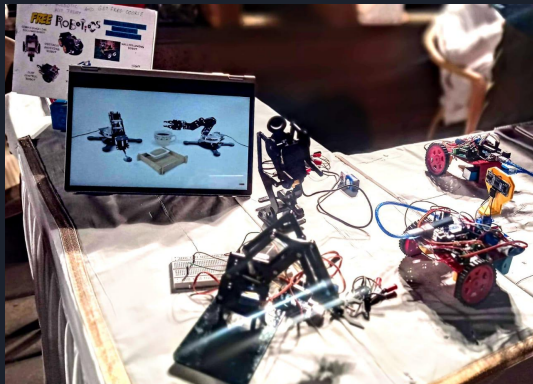
## Our Team and Executive Summary:

Pratham Prasoon: <https://prathamprasoon.com/>, <https://twitter.com/PrasoonPratham>

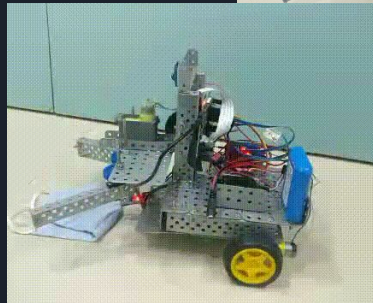
Atharva Wasekar: <https://in.linkedin.com/in/atharvawasekar>

Dhruv Sheth: <https://dhruvsheth-ai.github.io/>

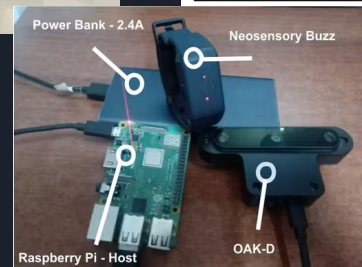
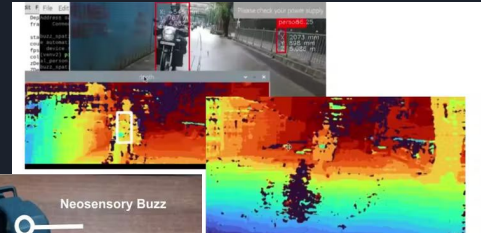
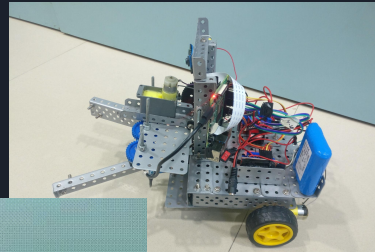
### Some of our Previous Robotics work:



Education Outreach



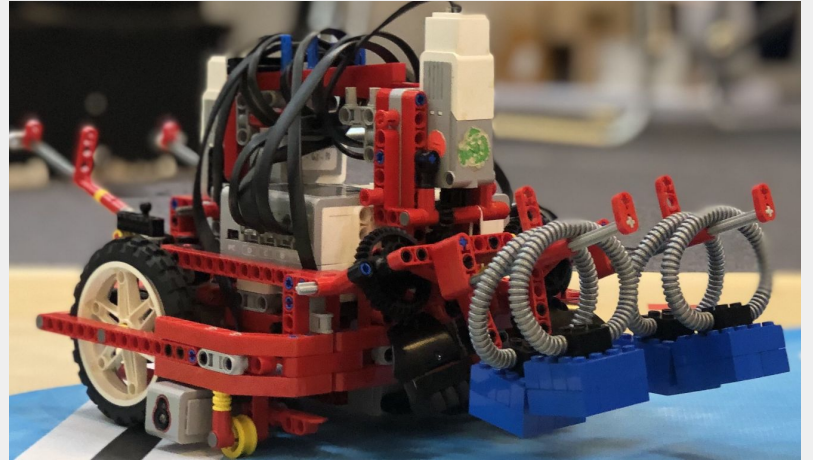
WRS, IRC



# Our Motivation

Robotics is one of the fastest growing fields and we love the thrill, challenge and innovation that takes place when participating in competitions in this field. Apart from the learning experience, a robotics competition enables us to solve a real-world problem creatively while working with technologies we might have not worked with before.

At World Robot Olympiad, we aim to juxtapose creativity with technical skills boiling down to creating a robust and accurate algorithm which serves as the logic for our autonomous vehicle performing tasks such as grabbing objects and navigating.





# What is the World Robot Olympiad?

It is an acronym that defines not only a robotics competition, but a way of providing students and mentors alike with the opportunity to experience everything that goes into a true engineering project.

First held in 2004, The World Robot Olympiad is a global robotics competition for young people. The World Robot Olympiad competition uses Lego Mindstorms manufactured by LEGO Education.

World Robot Olympiad Association™ is an independent non-profit organization. All revenue from sponsorships and fees is invested in support of the mission, which is to promote robotics in STEM education worldwide.



# Why are we fundraising?

01

Develops a symbiotic relation between us and the company. While we need funds, the company can advertise through the means of such competitions as well as describe funds to be contributing towards a better social cause, in this case towards educational fulfillment.

02

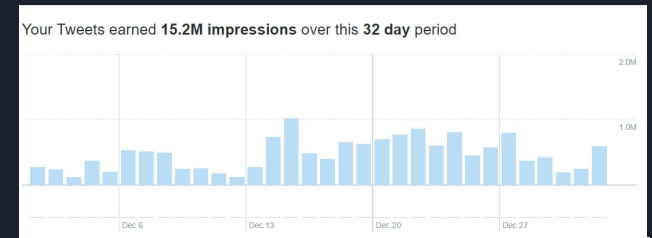
We will be using the funds to cover our expenses for the team registration and the robotics kit (Lego EV3 Mindstorms®).

03

We are requesting \$1500 initially to cover the immediate costs for registration and EV3 kit.

# Why sponsor us?

- 1) Pratham Prasoon's twitter account has 146.3K followers, 15M impressions/month. Social media has a huge role in reaching out to people and through those means we can help get into limelight the positive educational initiatives your company has taken to help us on our initiative or the core technology of the company.
- 2) Educational outreach about the technological work of the company in our schools/institutions post-competition and online communities to help spread the word of your company. You can use visuals of the event conducted for promoting about the company too!
- 3) Recognition in the world's most prestigious robotics competition in the form of logos on T-shirts, Website, Github Repository, Social Media posts and insights into our build.
- 4) Open source all code, materials, CAD (if any) used in our build and compose a tutorial to build the Autonomous Vehicle from scratch customised to use your software and machine learning binaries juxtaposed with our personal experience in the competition to provide an educational outreach initiative to your companies profile.





# Technology we'll use:

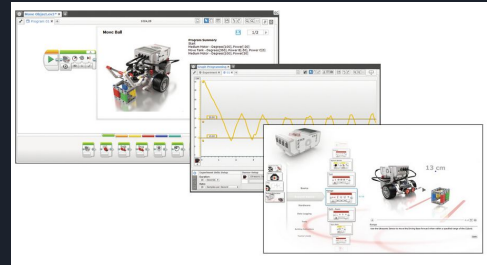
MicroPython using Pybricks APIs, and runs on a Lego Mindstorms EV3 Intelligent Brick with the ev3dev operating system. Since the competition restricts us to use LEGO Hardware and Sensors for the competition, we'll be using EV3 color sensor running machine learning to distinguish between related block colors making our autonomous vehicle more robust. An additional ultrasonic sensor to measure depth while autonomously navigating will be used.



Pybricks API



Lego  
Mindstorms



EV3 Dev Operating  
system



EV3 Colour and  
Ultrasonic sensor

# Timeline of the competition and our build

## Prototyping

We are working using LEGO EV3 Simulators even before the kit arrives!

July-August 2022

## Regional Level

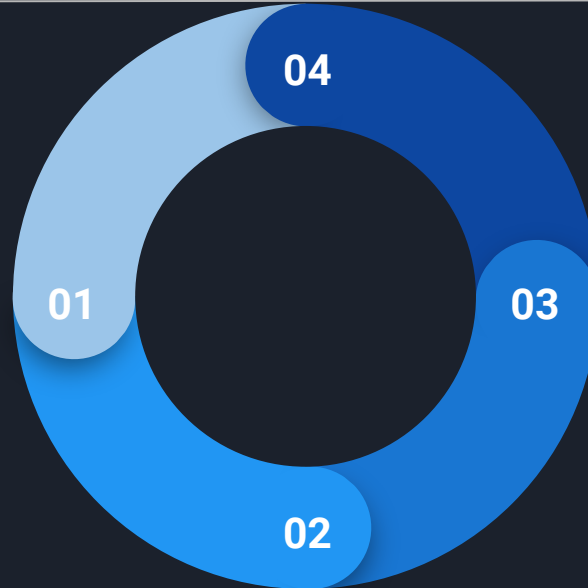
August-September 2022 (dates not announced)

## International Level

17-19 November 2022

## National Championship

End of September 2022 (dates not announced)





**Thank you!**

We look forward to your response and aim to win at the World Robot Olympiad 2022!

# Some help needed for the World Robot Olympiad

Inbox x



**Dhruv Sheth**

Sat, Jul 9, 12:43 AM



Hello David, Artie! Hope you'll be doing well! Currently a few of my teammates and I were working on designing an autonomous vehicle for the...



**Dhruv Sheth**

Sat, Jul 9, 12:45 AM



----- Forwarded message ----- From: Dhruv Sheth <dhrvsheth.linkit@gmail.com> Date: Sat, Jul 9, 2022 at 12:43 AM Subject: Some hel...



**David Tischler** <davidtischler@edgeimpulse.com>

Sun, Jul 10, 8:00 AM



to Artie, me ▾

Hey Dhruv, hope you are having a great weekend. I had a chat with Artie, and we're going to take you up on this opportunity and will sponsor your team. :-)

You did a great job explaining the benefits, and thanks for clearly outlining the deliverables. I am particularly interested in seeing that Lego Mindstorm kit running Edge Impulse, and also a tutorial on building an autonomous vehicle from scratch!

I'll start figuring out the best way to make the payment, and will let you know what I come up with. Paige is out of the office next week, so it may be the following week before I can get an Invoice processed, hope that is ok.

Have a great rest of your weekend!

David