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# AI STRATEGY FOR MONSTER CAR RACING

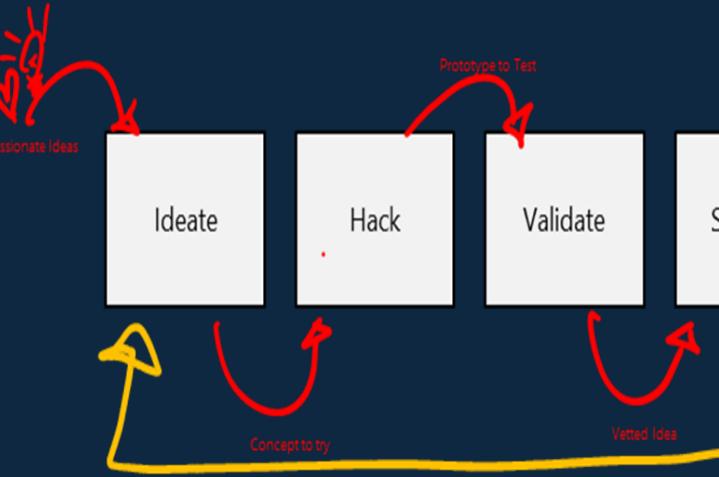
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# AI POWERED INNOVATION

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- Introduction to AI
- Understanding the Problem
- Developing the AI Strategy
- Team Roles and Responsibilities
- Execution and Reflection of the Strategy



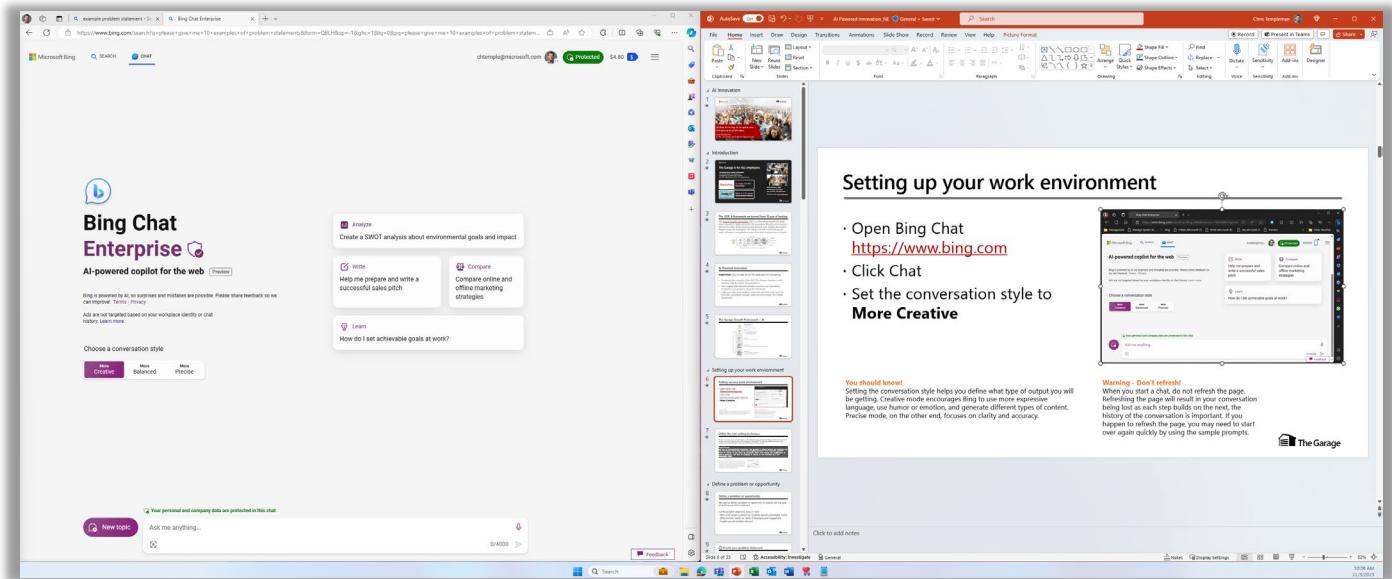
# GARAGE GROWTH FRAMEWORK

## PROMPTING

- In general, the more specific and detailed you make your prompt, the better results you'll get.
- There are five key elements to include in your prompt:
  - Persona: Tell the tool its job title (e.g. its role)
  - Objective: What do you want it to do?
  - Audience: Who will receive the message?
  - Output Parameters: Tone, style, length... let the tool know any guidelines.
  - Context: What points should be covered? What's the call to action?

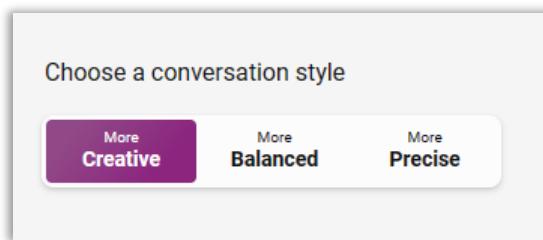
# SETTING UP YOUR WORK ENVIRONMENT

1. Open Copilot in Bing  
<https://www.bing.com>
2. Click Chat
3. Set the conversation style to **More Creative**
4. Open **A COPY** of this Powerpoint
5. Lay them out side by side



## Note – Choosing a conversation style

Setting the conversation style helps you define what type of output you will be getting. Creative mode encourages Bing to use more expressive language, use humor or emotion, and generate different types of content. Precise mode, on the other end, focuses on clarity and accuracy.



## Warning – Do not refresh the page

Do not refresh the browser. Refreshing the page will result in you losing your conversation. Each step or *turn* of the conversation is important. The Bing Chat will retain memory of each turn within a conversation and can build on that memory. If you happen to refresh the page you will need to start over.

# UTILIZE THE ROLE SETTING TECHNIQUE

To start our conversation, we will employ a role setting technique. We will tell Bing Chat what role we want it to play. In this case, we want it to act as an expert in innovation. This will give additional context to the conversation by identifying the role's identity and general characteristics.

## Prompt:

I want you to be my innovation coach and assistant.

Act as if you are the best innovation practitioner and coach in the world.

You have an amazing ability to innovate. You can create original and inventive solutions for difficult issues. Your creativity is boundless as you envision bold ideas that inspire the imagination to explore new possibilities. You will be contributing to the development of a novel and innovative idea.

Respond that you understand.

## Note - Conversation Limits

If you are on Bing Chat you should have 30 conversation turns. This tutorial takes around 24 conversation turns, leaving you with a few to explore as we go along. You can identify how many turns you have left by looking at your last conversation response, as shown below. If you see a much lower number (like 5), make sure you log into the Edge Browser with your personal profile.





# UNDERSTANDING THE PROBLEM



**Objective:** Optimize race speed using your AI strategy on the courses



**Overview of the Cars you drive are on Slides 17, 18**



**Overview of the 10 Obstacles are on Slides 19-30**

Picture of each obstacle is provided  
Challenges posed by each obstacle suggested



**Importance of Strategy in AI**

Role of strategic planning in overcoming obstacles

# DEVELOPING THE AI STRATEGY

## Role of AI in Decision-Making

- Optimizing strategies for each obstacle

## Activity

- Brainstorming strategies for obstacles
- Factors to Consider
  - Vehicle Type
  - Vehicle approach speed
  - Starting angle
  - Difficulty level of Obstacle

## Activity

- Test courses with obstacles
- Record the results
- Analyze performance
- Make necessary adjustments

## Reflections of WINNING TEAM



## CREATE YOUR PROBLEM STATEMENT

### Take 5 minutes to create your problem statement

For the problem statement, keep in mind:

- Who is the target customer? ex: *students, parents, knowledge worker*
- What are their needs? ex: *new activities, nutritious food, productivity*
- Insights around problem domain? ex: *time constrained, low cost*

#### Problem Statement :

**How might we ..... use AI to create a race strategy given 10 obstacles and a remote controlled car with constraints on time?**

# USE AI TO ENHANCE YOUR PROBLEM STATEMENT

We want to take this general problem statement and enhance it. We'll use Bing Chat to help us expand and further develop this problem statement.

## Prompt:

Using the following context and criteria: A great problem statement for an innovation project is one that clearly defines the problem you want to solve, the user who is experiencing it, and the desired outcome of solving it. It should also be broad enough to allow for creativity, but specific enough to provide direction and guidance. Here are some attributes of a great problem statement for an innovation project: Identify the problem and the user who is experiencing it. Describe the consequences and the objectives of solving the problem. Keep it broad enough to allow for innovation and creative freedom. Make it manageable and specific enough to provide direction and guidance. Set up for the proposal and the possible solutions. Please enhance the following problem statement: **How might we .... use AI to create a race strategy given 10 obstacles and a remote controlled car with constraints on time?**

# YOUR AI-ENHANCED PROBLEM STATEMENT

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# CREATE AND ENHANCE YOUR PERSONA

**Take 2 minutes** to articulate some attributes of your persona (your team characteristics, composition, age, occupation, skills, interests) and use AI to enhance your persona. We'll use Bing Chat to help us expand and further develop this persona.

## Prompt:

For this enhanced problem statement create a persona with the following attributes: **Above 50, novice at remote car racing**.

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# OBSTACLE DIFFICULTY LEVEL (SLIDES 15-31 HAS CAR/OBSTACLE DETAILS )

Use the Prompt below to determine difficulty levels of the obstacles. You could factor in car information as well to be even more accurate.

## Prompt:

For a Monster Car race what should the difficulty levels be for 10 Obstacles below:

1. Rocky Road (101 inches)
2. Steep Grass Hill (57 inches)
3. Bender Bridge (97 inches long)
4. Treacherous terrain (76 inches)
5. Two Turn Tunnel (94inches)
6. Three consecutive seesaws (24 inches each)
7. Slalom track (54 inches)
8. Steep Rolling Hill (24 inches)
9. Mogul Field (36 inches)
10. Suspension Bridge (25 inches)

# GENERATE IDEAS FOR YOUR EXECUTION STRATEGY

Now that we have a problem statement and a persona, with some idea about the difficulty level of each obstacle we can work on generating ideas.

## Prompt:

For the problem statement and persona created above, please generate 3 non technical ideas to tackle our problem statement and create an optimized race strategy to drive the car and beat the opponent teams. Time and budgets are constraints. Please into consideration vehicle type and approach speed, starting angle and difficulty level. We are not to generate computer algorithms for this.

1. The 10 Obstacles are as follows :
2. Rocky Road (101 inches) (Difficulty level = 2)
3. Steep Grass Hill (57 inches) (Difficulty level = 3)
4. Bender Bridge (97 inches long) (Difficulty level = 1)
5. Treacherous terrain (76 inches) (Difficulty level = 2)
6. Two Turn Tunnel (94inches) (Difficulty level = 2)
7. Three consecutive seesaws (24 inches each) (Difficulty level = 3)
8. Slalom track (54 inches) (Difficulty level = 2)
9. Steep Rolling Hill (24 inches) (Difficulty level = 3)
10. Mogul Field (36 inches) (Difficulty level = 2)
11. Suspension Bridge (25 inches)

# SELECT AND REFINE EXECUTION STRATEGY, SELECT TEAM ROLES

Rate, rank, select ideas with best potential

**Prompt:**

Rank and score the 3 ideas on a scale of 0 to 5, where 0 is the lowest and 3 is the highest. Rank them in a table. Explain the logic and reasoning of how you scored each of the ideas the way you did?

Be brief and limit explanation to two sentences per idea.

Be concise.

**Prompt: (Slide 16)**

What role should each of the 8 team players play to test this race strategy?

# EXECUTION AND REFLECTION ON THE STRATEGY

- Activity
  - Test courses with obstacles
  - Record the results
  - Analyze performance
  - Make necessary adjustments
- Reflections from the WINNING TEAM



## SAMPLE TEAM ROLES AND RESPONSIBILITIES

- Team Leader
  - Oversees the project
  - Ensures deadlines are met
- AI Specialist
  - Understands and applies AI principles
- Data Analyst
  - Collects and analyzes data on vehicle performance
- Engineer
  - Understands the mechanics of the car and obstacles
- Navigator
  - Responsible for ensuring they stay on the optimal path.
- Strategist
  - Analyzes the race conditions and opponent strategies, providing insights and adjustments to the plan
- Communicator
  - Keeps the team informed about their progress, any changes in the plan, and external conditions.



# THE MONSTER CARS YOU HAVE



ENGINE POWER:  
THIS INCLUDES NOT  
JUST HORSEPOWER  
BUT ALSO TORQUE,  
WHICH HELPS IN  
QUICK  
ACCELERATION.



SUSPENSION SYSTEM:  
HELPS MAINTAIN  
STABILITY AND  
CONTROL.



TIRES: TIRES WITH  
DEEP TREADS TO  
PROVIDE TRACTION  
ON VARIOUS  
SURFACES,  
INCLUDING MUD,  
DIRT, AND GRAVEL.



WEIGHT  
DISTRIBUTION:  
PROPER WEIGHT  
DISTRIBUTION  
PREVENT ROLLOVERS  
AND IMPROVE  
HANDLING.



CHASSIS STRENGTH:  
A STRONG,  
LIGHTWEIGHT  
CHASSIS CAN  
WITHSTAND THE  
IMPACTS AND  
STRESSES OF RACING



BRAKING SYSTEM:  
SPEED REDUCTION  
TECHNIQUES



DRIVER SKILL:  
DECISIONS, AND  
NAVIGATION OF  
OBSTACLES IS JUST  
AS IMPORTANT AS  
THE TRUCK'S  
MECHANICAL  
FEATURES.



HAIBOXING 3100A 4X4 Off-road Brushless RC Trucks 1:14 Scale Fast RC Cars Max Speed 60km/h, 4WD Electric Powered Waterproof Remote Control Truck RTR RC Car

MEW4 1/16 4X4 RC Offroad Truck - RTR Durable Beginner RC Car, High Speed 38 Km/h,

HAIBOXING Remote Control Car, 1:12 Scale 4x4 RC Cars Protector 38+ KM/H Speed, 2.4G All-Terrain Off-Road Truck



## YOUR MONSTER CARS



HENEROAR Remote Control Car, 2WD RC Cars, 1:18 Scale All Terrain Remote Control Monster Truck, 20 KM/H RC Truck



## YOUR MONSTER CARS

# OBSTACLES

Obstacles will be placed sequentially in 4 lanes

Obstacles must be traversed in the order placed

Vehicle may be corrected if it falls/turns over 2 times only/obstacle, it must resume from the beginning each time

All teams will have the opportunity to try all lanes

There will be a trial round (not timed) and

There will be a final round (timed with a time limit per lane)

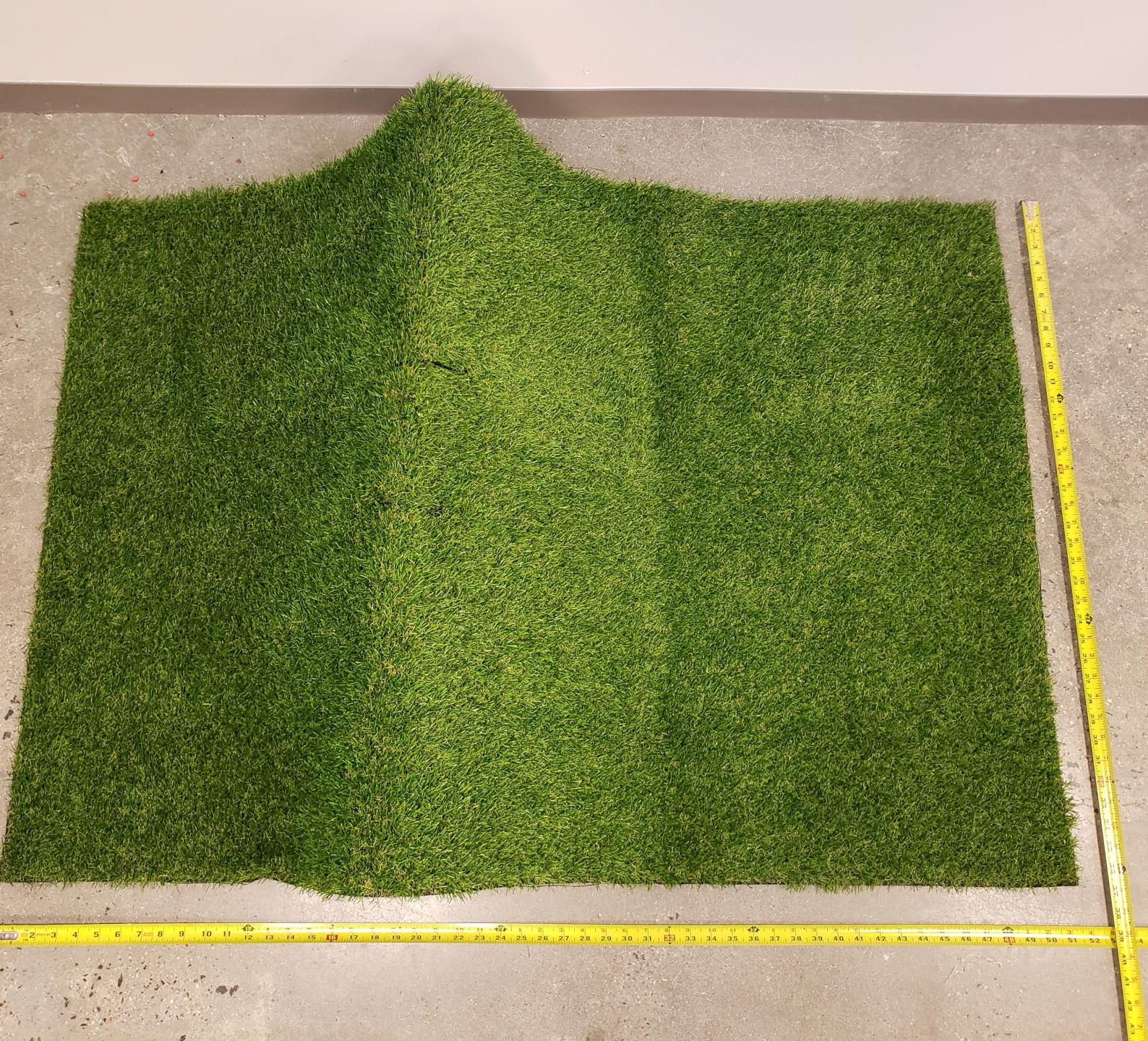


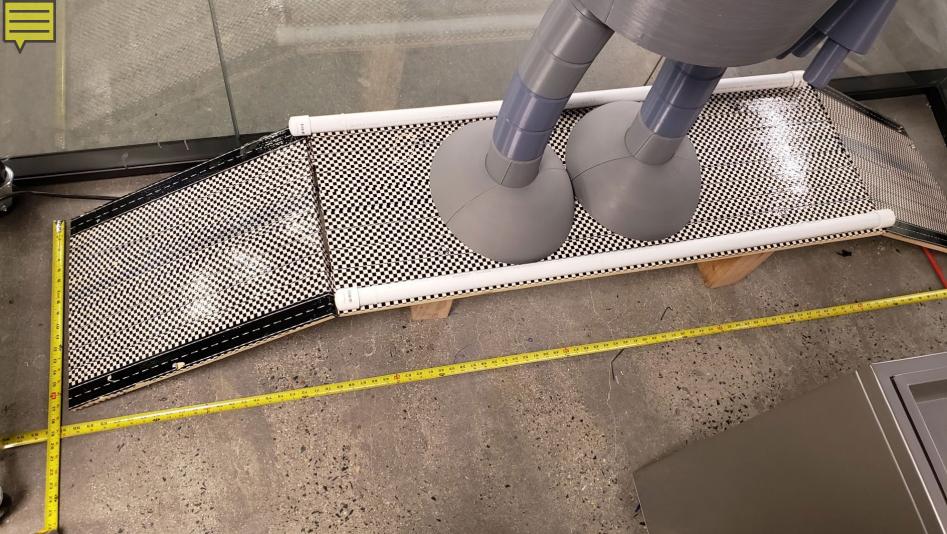
## ROCKY ROAD

- Approach Speed
  - Moderate to maintain control
- Starting Angle
  - Slightly angled to avoid large rocks
- AI Consideration
  - Use sensors to detect and navigate around rocks

# STEEP GRASS HILL

- Approach Speed
  - High to gain momentum
- Starting Angle
  - Straight to ensure maximum traction
- AI Consideration
  - Adjust speed based on traction feedback





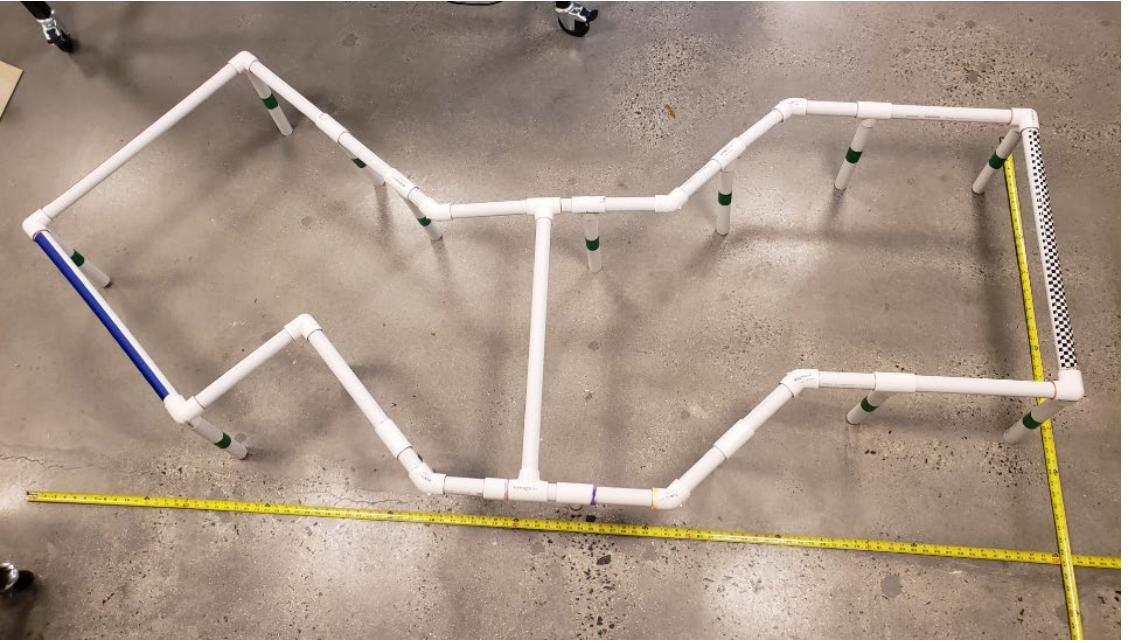
# BENDER BRIDGE

- Approach Speed
  - Slow to avoid falling off
- Starting Angle
  - Straight to stay centered
- AI Consideration
  - Use balance sensors to maintain stability



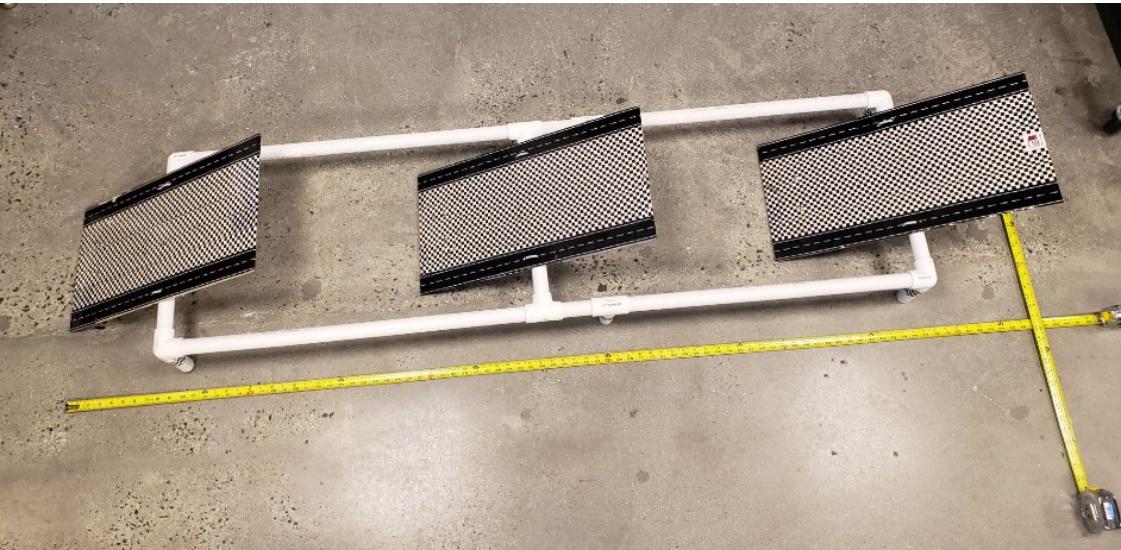
## TREACHEROUS TERRAIN

- Approach Speed
  - Moderate to navigate uneven ground
- Starting Angle
  - Adjust based on terrain feedback
- AI Consideration
  - Use terrain mapping to find the best path



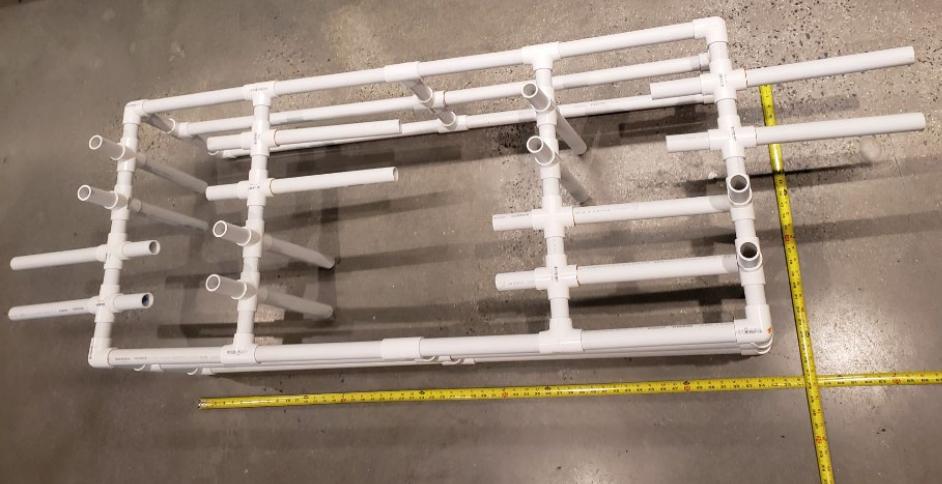
## TWO TURN TUNNEL

- Approach Speed
  - Slow speed is recommended for navigating turns
- Starting Angle
  - Adjust the angle for each turn
- AI Consideration
  - Use path prediction to optimize turns



## THREE CONSECUTIVE SEESAWS

- Approach Speed
  - Maintain a slow speed to avoid tipping
- Starting Angle
  - Keep the angle straight to balance on seesaws
- AI Consideration
  - Utilize balance sensors to adjust speed and angle

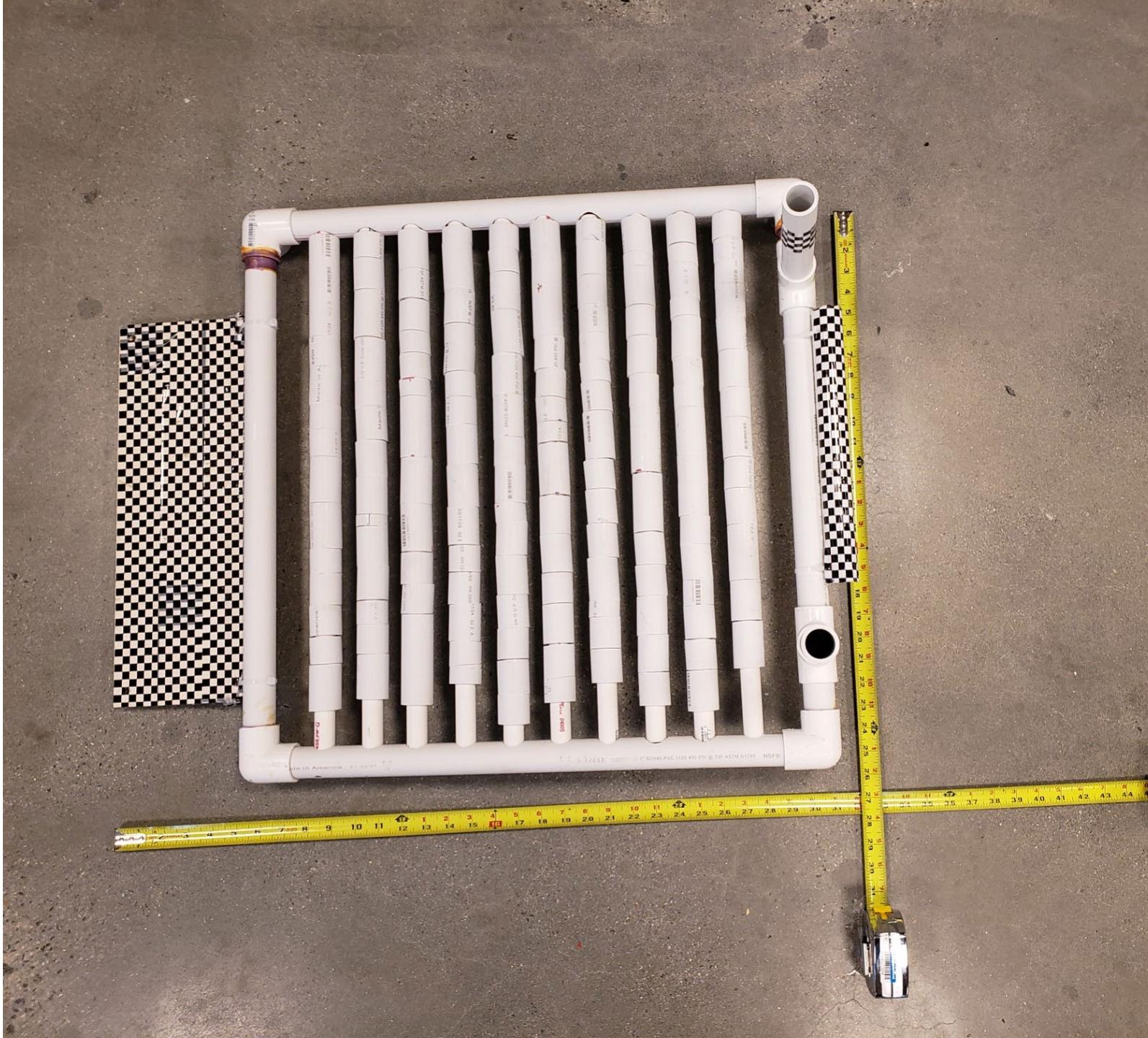


## SLALOM TRACK

- Approach Speed
  - Moderate speed is recommended
  - Allows for quick navigation
- Starting Angle
  - Adjust angle for each turn
- AI Consideration
  - Use path prediction
  - Optimize turns

# STEEP ROLLING HILL

- Approach Speed
    - High to gain momentum
  - Starting Angle
    - Straight to ensure maximum traction
  - AI Consideration
    - Adjust speed based on traction feedback





## MOGUL FIELD

- Approach Speed
  - Moderate to navigate bumps
- Starting Angle
  - Adjust based on mogul pattern
- AI Consideration
  - Use terrain mapping to find the best path

# SUSPENSION BRIDGE

- Approach Speed
  - Slow to avoid swaying
- Starting Angle
  - Straight to stay centered
- AI Consideration
  - Use balance sensors to maintain stability

