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IN ACTION
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Finals Info Pack

Welcome Message

Congratulations! Given your team's outstanding model performance, your team has been selected to be deployed as the Counter-Terrorism task force for the high level conference between foreign delegates at "*Crown Renaissance Resort*".

Our intelligence sources has reported that the terrorist, *'White Stinger'*, will be loitering around the conference where he plans to kidnap the President of United AI, '*Mr Dastan'*. Unfortunately, new reports also show that the *'White Stinger'* has the capability to infiltrate our communications network and might be able to spoof and feed us wrong information so as to disrupt our mission.

Your task is to do a sweep on the conference venue without alerting '*White Stinger', 'Mr Dastan'* or the foreign delegates. To achieve this, you will need to

- Integrate your Object Detection, ReID and ASR models with a robot
- Automate the robot to navigate through the conference hall
- Build a voice recognition mode that would be able to distinguish the identity of the speaker

Best of luck to all teams, and may the best robot win!

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Today-I-Learnt 2023 (TIL2023)

Content

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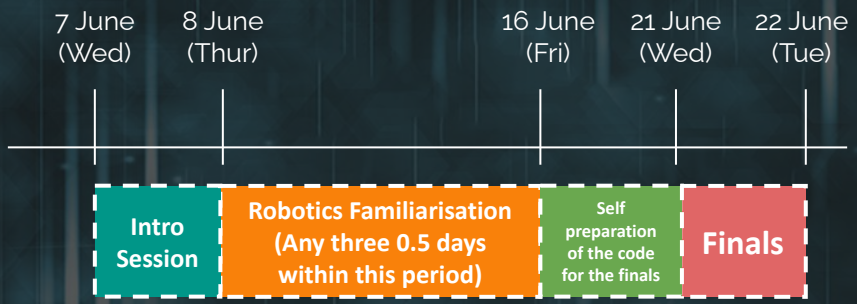
Finals Timeline



Online demo: 7 Jun, 1000H-1300H
Robotics Familiarisation period: 8 June - 16 June
Finals @ Marina Bay Sands: 21 June 0800H - 22 June 1800H

Teams can book for familiarisation slot to help with their robot integration
IMPORTANT ! The first session (8/9 June) is compulsory for sound recording

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The Venue :

Athena Dynamics Pte Ltd

8 Penjuru Ln, Singapore 609189

Overview

Robotics Familiarization

Where ?

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Getting There (via Chartered Bus) :

- Pick up Location: Bus Bay 5, Jurong East Private Bus Pick-up Point along Venture Avenue
- Athena Dynamics Staff will be there to direct you to the bus
- Bus plate number will be made known to you the day before through Discord
- Bus Boarding Time :
  - AM session : **0815H - 0825H**
  - PM session : **1315H - 1325H**

Overview

Robotics Familiarization

Where ?

Please refer to the attached Familiarisation Venue guide (in your email) for *full* directions

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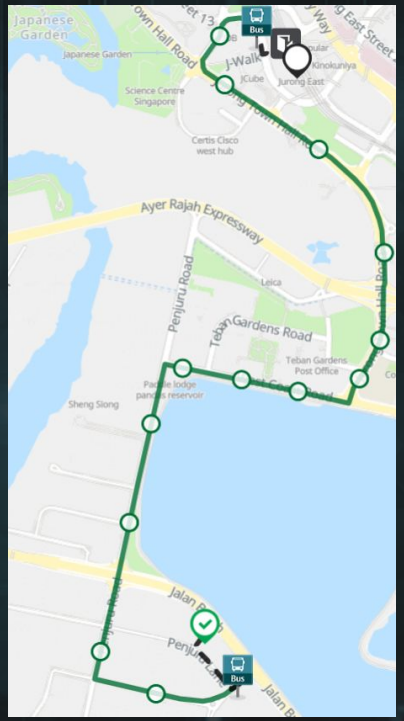
STRATEGY IN ACTION

Getting There (via Public Transport) :

- Option 1: Take Bus 78 from Jurong East
- Option 2: Take Taxi / Private Hire to the venue
- Upon reaching, inform the security guard to contact the event organizers and wait at the **guard house** to be escorted to the venue.



Overview

Robotics Familiarization

Where ?

Please refer to the attached Familiarisation Venue guide (in your email) for full directions

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Things to do **BEFORE** coming:

1. Reply the email with
    a. e-signed **Visitor Agreement Form**
    b. For participants under the age of **18**, please also obtain your parent's e-signature on the **Indemnity form**
2. Read the Venue's **Rules and Guidelines**

Things to **BRING**:

1. Printed/soft copy of the confirmation email as a finalist
2. Proof of identity (e.g. NRIC or student pass) for registration
3. Water bottle

Overview

Robotics Familiarization

THINGS TO PREPARE

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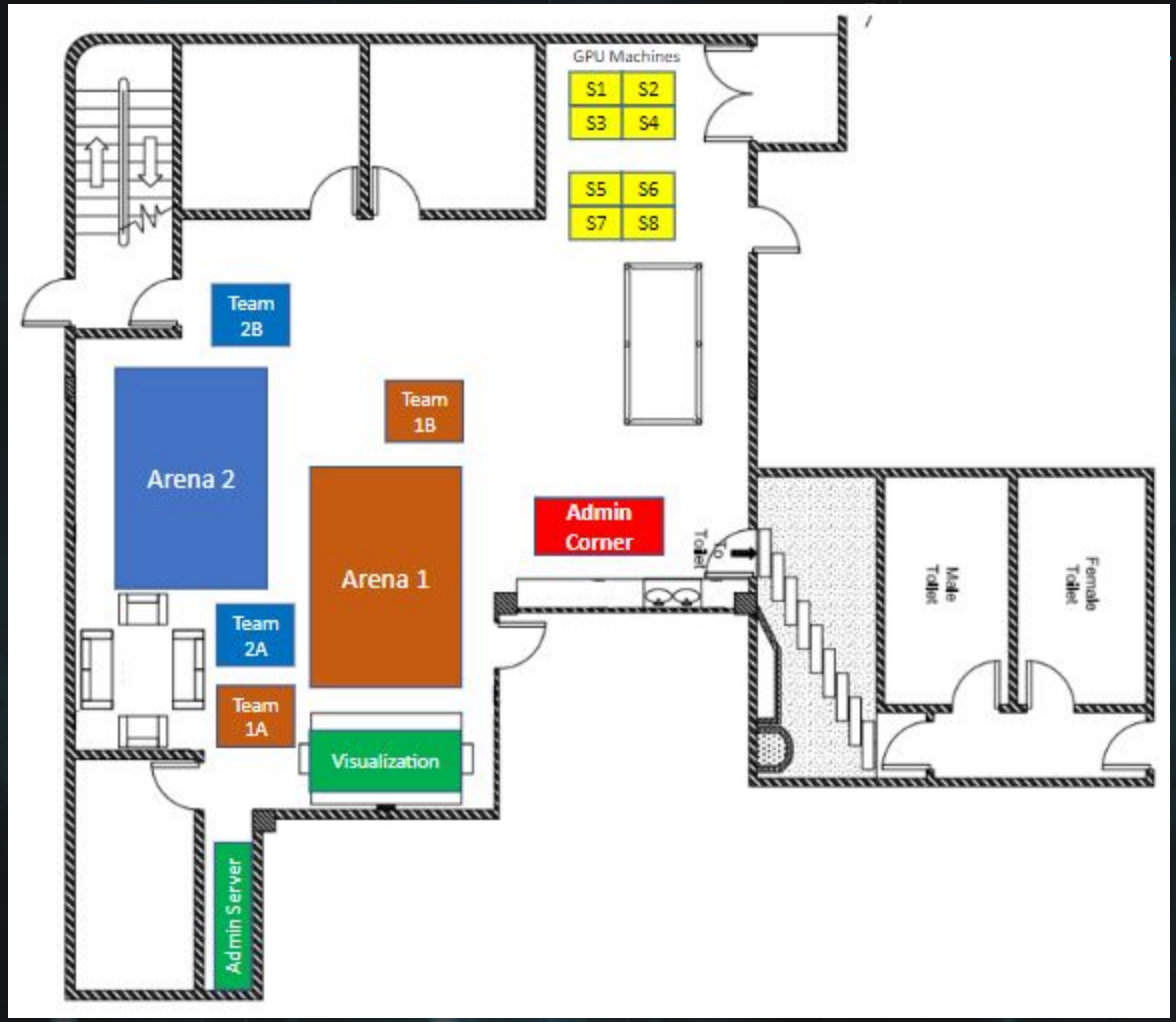
Overview

Robotics Familiarization

What to expect ?

1. Physical Robotics ARENA :
    a. To test the team's autonomy code and AI model integration
    b. Book slots for whole team to come down
2. SIMULATOR Machines :
    a. You may use these to train your AI models
    b. To test your autonomy codes on a simulator
    c. Only **2** students per team will be allowed to come down to utilise the simulator, to prevent overcrowding.
3. House Rules :
    a. Students heading down to the venue are required to reply to the email to **submit their signed Visitor Agreement Form** (see email) before arriving and to abide by the venue's **Rules and Guidelines** (see email)

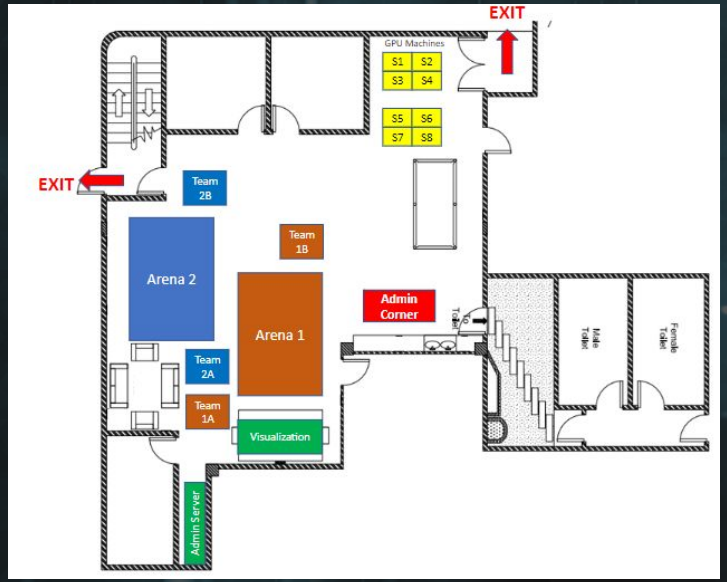


Overview

Robotics Familiarization

Venue Layout

- Emergency Contact :
  - In case of an emergency, please refer to the red arrows for the exits



Overview

Robotics Familiarization

Emergency Routes

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Provided hardware:

CPU	i7-13700K
GPU	Nvidia 4070Ti
RAM	32GB
Storage	1TB nvme gen 4 SSD

Installed drivers/software

- CUDA 12.0
- Python 3.8.10

Overview

GPU Desktop Environment

What to expect ?

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- **Audio Recording Session** :
  - Voice recording of finalist teams for ASR and Speaker Identification portion of each checkpoint
  - only one member in each team is allowed in the recording room.
  - No re-recording would be allowed.
  - **Authorised staff will be accompanying team members from the familiarization venue to the sound recording room and back to the familiarization venue.**

Overview

Robotics Familiarization

What to expect ?

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Robotics Challenge

What is the Robotics Challenge about?

1. The Robotics Challenge is a combination of the CV and ASR challenges you have completed, plus a new Speaker ID and Robotics element.
2. You are tasked to write scripts for a semi-autonomous robot to:
   a. (New) Plan a path for the robot to **navigate** to checkpoints in the arena
   b. Use your trained **Object Re-Identification models** to detect if the scene contains the suspect/hostage plushie
   c. **(New)** Use your **Speaker Identification models** to identify which audio file belongs to your opposing team
   d. Use your trained **Speech Recognition models** to identify the digits in the audio

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Speaker ID Challenge

What is the Speaker ID Challenge about?

1. Your task is to train a model to recognize the identity of a speaker in the audio file.
2. The answer that you will have to return back to the server would be the audio file name, the detected opponent team and member.
   E.g. {AudioFile}_{TeamX}_{MemberY}
3. During the Robotics Familiarization period, on Session 1, (8 June - 9 June), it is **mandatory** for all members of the team to physically come down to do a **voice recording session**. If without clear reason, the team will be penalised as the recording session would affect the other teams.
4. The voice recordings of all finalist participants will be compiled as the training set for this challenge.
5. The evaluation set will consists of 5 recordings from other teams.
6. You are not allowed to train this model with any external dataset (i.e. no open-source or self-recorded datasets will be allowed).
7. The target release date of this custom dataset is 11 Jun, 1200

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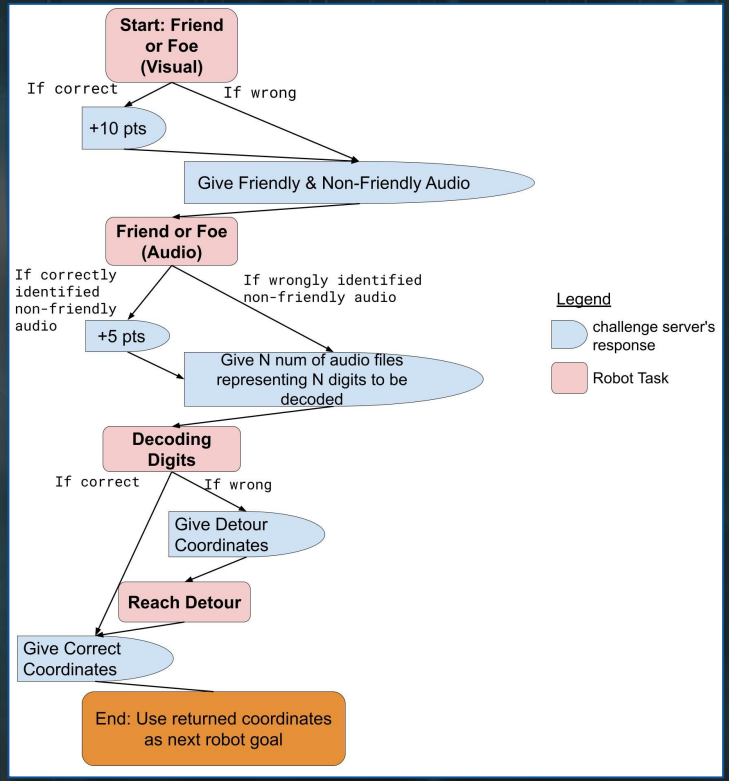
Evaluation

1. At each checkpoint, you will need to complete 3 Tasks: Object Re-Id, Speaker Id and Speech Recognition.
2. For each task, you will be awarded the following points for submitting the *correct* answer:
    a. Object Re-Id: +10 maze score
    b. Speaker Id: +5 maze score
    c. Speech Recognition: No points awarded if correct, but your team will be given the next correct checkpoint location. If wrong, your team will be given the coordinates to a detour which will inadvertently affect your maze completion time.
3. No points will be be given for wrong answers submitted for each task.

Robot Task Workflow and Evaluation



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Competition Format

1. The 8 finalist teams will be split up into 2 groups (A & B) for the group stage. Each group will do a **round-robin** before the top two teams of each group proceed to the grand finale.
2. Each team will play a **match** against every other team in its group. Points will be awarded as such:
    a. Win: +3 match points
    b. Draw: +1 match point
    c. Lose: +0 match point
3. To win a **match**, your team must have a higher maze score than the current opponent. If the maze score is tied, then the team with a shorter maze timing wins. Else, it's a draw.

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Competition Ranking

1. Team with the **highest match points** in each Group will proceed to compete in the grand final for the **overall 1st place.** Teams with the **2nd-highest match points** in each Group will compete in the grand final for the **overall 3rd place.**
2. Teams will be **ranked** (and tie-broken) in this priority order:
    a. Total match points
    b. Total maze score
    c. Total maze timing
    d. Team's ranking in the qualifiers stage
3. Detailed explanations on the Finals can be found at https://til-23.github.io/til-23-info-public/ starting 5 Jun noon.

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Training Materials

1. Training Materials for the finals will be shared on the Zindi platform. Finalists will be able to view a competition page for the Finals. URL will be communicated to finalists when it's ready.
2. The new materials will cover Speaker Identification, Usage of the RoboMaster SDK and Pathfinding.

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Channels for Communication

1. Brainhack TIL Email: **BH-TIL-AI@dsta.gov.sg**
2. Discord Server (watch this for announcements!)
3. Your Mentor (CC-ed in the email titled: "*Welcome to Brainhack Today-I-Learned Artificial Intelligence 2023!*")
4. Technical Information: https://til-23.github.io/til-23-info-public/

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Code of Conduct

1. Do not plagiarise code from other teams
2. Do not share your models with other teams
3. Do not purchase any of your own datasets

Teams found to have violated any of the above will be liable for disqualification.

For more information, refer to: https://til-23.github.io/til-23-info-public/

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Key Dates

Date	Item
5/6 Jun	Release of Finalists, Infopack, Finals-related web pages, Challenge code and Training materials. 6 Jun: Deadline to submit Familiarisation Slot Booking
7 Jun	Zoom Webinar - Introduction, Demo, Q&A Release of sample autonomy code
8-9 Jun	(Mandatory) Familiarisation Session 1 (Mandatory) Audio Recording Session Your team will be penalised if no valid reason is given to miss the recording session
11 Jun	Release of Speaker ID dataset
12-13 Jun	Familiarisation Session 2
14-15 Jun	Familiarisation Session 3
21-22 Jun	The Finals @ Marina Bay Sands

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THANK YOU!