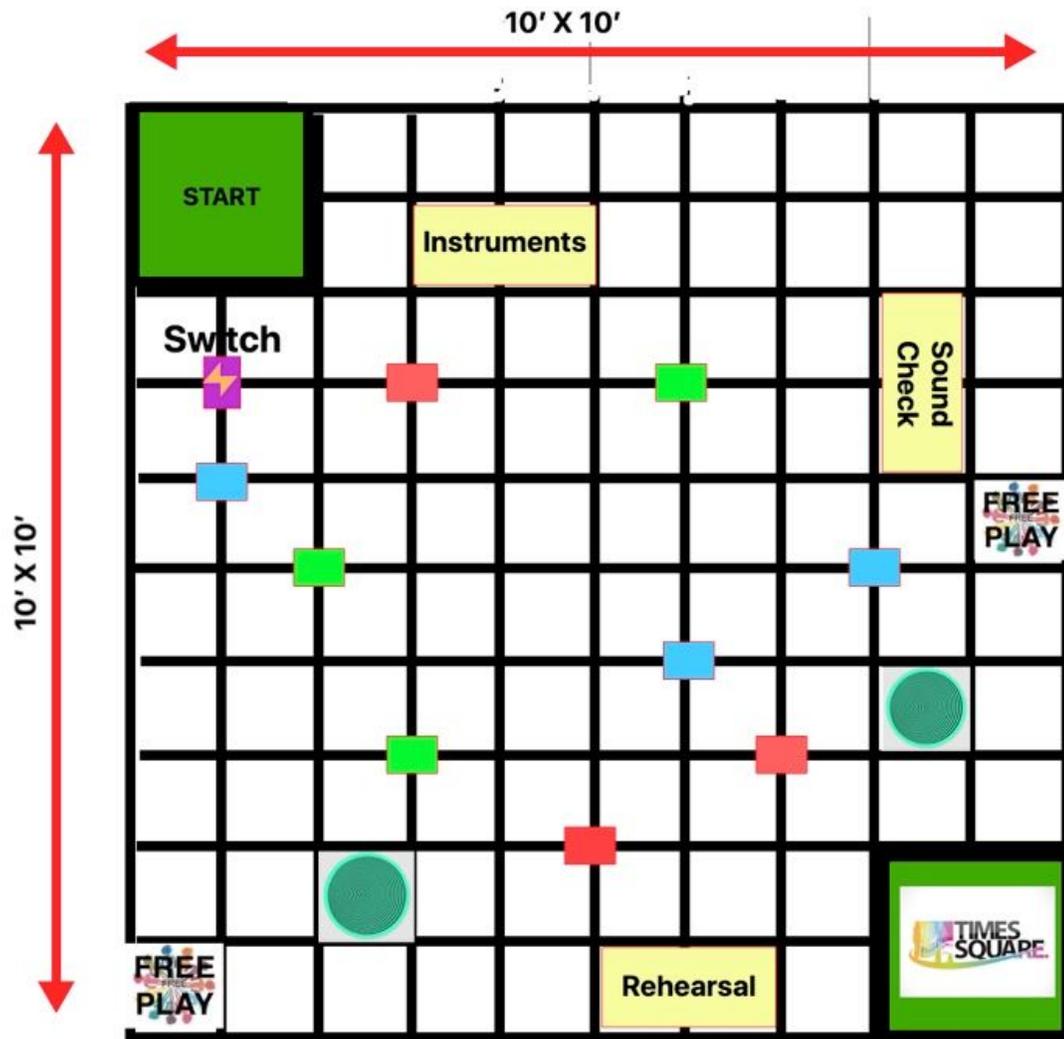


Musical Time Machine

Autonomous Course

Musicians List

1. J. S. Bach Years active 1703-1750 https://en.wikipedia.org/wiki/Johann_Sebastian_Bach
2. Glenn Miller Years Active 1923-1944 https://en.wikipedia.org/wiki/Glenn_Miller
3. Billie Holiday Years Active 1933-1959 https://en.wikipedia.org/wiki/Billie_Holiday
4. The Beatles Years active 1960-1970 https://en.wikipedia.org/wiki/The_Beatles
5. Michael Jackson Years Active 1964-2009 https://en.wikipedia.org/wiki/Michael_Jackson
6. Whitney Houston Years Active 1977-2012 https://en.wikipedia.org/wiki/Whitney_Houston
7. Selena Years Active 1982-1995 <https://en.wikipedia.org/wiki/Selena>
8. Garth Brooks Years Active 1985-Present https://en.wikipedia.org/wiki/Garth_Brooks
9. Jay-Z Years Active 1988- Present <https://en.wikipedia.org/wiki/Jay-Z>



-  Musicians to Collect (Elementary)
-  Musicians to Collect (Middle School)
-  Musicians to Collect (High School)
-  Time Vortex to Avoid
-  Time Machine Switch

MISSION CHALLENGE

Using a time machine, you will be going back in time to gather musical legends in history and bring them back to 2020 for a Robot-AID concert in New York City's Central Park.

You may power up your time machine by driving your robot to the power station, from there you will turn the switch on and get ready to travel back in time!

DESCRIPTION

The goal is to complete as many tasks as possible within four minutes, bots do NOT have to be started at the exact same time, there can be a 5 second delay between start times for the bots.

Teams may have up to five members. The course will be inside a 10' X 10' area and will be constructed out of 24" foam interlocking mats - using the smooth side. Gridlines will not be provided on event course. There can be a maximum of 2 robots on the course. Both robots can collect musicians and have them in Times Square at the end for the points. Participants will be allowed to restart the course as many times as they would like to during the allotted time. The robot must be modified (engineered) to complete the mission. There will be a perimeter around the course area and only competitors are allowed in this area (no coaches, mentors, parents, observers).

Free Play Area: If a team member needs advice, they may visit with coach/mentor but they may not touch the robot or change the programming unless the robot is in the "Free Play Area." The "Free Play Area" serves as a "refresh area/pit stop" where robots can be reprogrammed or touched without point penalty. If the robot gets to the free play area with a musician, they may re-orient the robot and the musicians in the free play area. Team members may move their robot from the free play area back to start if needed.

When the FRONT two wheels of the robot enter the "Free Play Area," a robot can:

- a. Be positioned to complete the remainder of the course.
- b. Utilize an additional program.
- c. The clock will continue to run.

The best score and fastest time will be used for final scoring and ranking. All judges decisions are final.

RULES/POINTS

1. The team will have 4 minutes to complete the course avoiding obstacles.

Once the robot enters the course area, only the students are allowed to touch or engage with the robots. Students may use up to 2 computers to program.

2. All wheels must remain in contact with the mats (Judges' discretion).

3. Rules for touching the robot during play:

- If the participant chooses to touch the robot for a route adjustment while not in the Free Play Area, the student must first inform the judge of the adjustment.
- Each adjustment will result in the following penalties: First course adjustment - 20 seconds added to final time. Second course adjustment - 30 seconds added to final time. Third course adjustment – start the course over (time will not be stopped).

4. The LCD screen on the robot will need to display the words “Musical Time Machine.” If using another programming language, the student must first inform the judge - an LED blink SOS/Morse Code, etc may be used (one point).

5. One point will be awarded when the time machine is powered on using the switch. The switch will be in the off position at the start of the course and will be facing towards the start block.

6. The musicians should be gathered in any order and taken to Times Square. One point will be given for each musician brought to Times Square. All the musicians must be inside the attachment that the students create when they arrive at Time Square and remain in the Times Square Boundary designated on the course. All musicians will remain on the course for elementary, middle school and high school.

Elementary- up to 3 Musicians

Middle School- up to 6 Musicians

High School- up to 9 Musicians

7. Time Vortex: If any part of a robot enters a time vortex, a 10 second penalty will occur. (Ten seconds will be taken off of your time).

8. Musician Pre-performance Tasks: Equipment, Sound Check and Rehearsal
Participants may choose up to 3 tasks. The requirements for each grade level are as follows:

Elementary - 1 task

Middle School - 2 tasks

High School - 3 tasks

However, if each grade level chooses to sweep an additional pre-performance task area they will be awarded an additional point for each task completed.

- To complete the task, robots must follow this sequence: Drive forward – back – forward over the task (one point).
 - The robot must remain within 2” from the end of the front and back of the task area. If a wheel goes outside of the white 2” boundary on the task, the task will not be completed.
- When the task is complete, the robot must stop for a 3 second delay (one point).
- After the delay, the robot is to make a sound signaling the task is complete (one point).

10. If the robot enters the FREE PLAY AREA contestants may enter and reposition their robot without point deductions.

11. At the end of the time limit, if a robot wheel is touching any part of the Times Square one point will be awarded for each musician inside the attachment.

12. One robot may be programmed to play the song Shave and a Haircut, for an additional point in Times Square at the completion of the course.

13. If course is completed before time is called, one point will be awarded.

14. The winner will be:

1. The team with the highest number of points.
2. In the event of a tie for Points The team with the shortest time will win.
3. If there is a tie for points and time, one team will become Team A the other Team B. An equal number of sticks/paper labeled A and B will be placed in a "can." One team member will be asked to pull a stick/paper - the letter on the stick/paper determines the winner.

Musical Time Machine Layout (each block = 12”)

- Start and Times Square (Finish) = 24” x 24”
- Time Vortex= 12” x 12”
- Time Machine Power Up= On/Off Switch (see photos)
 - The base of the switch is: 3” x 4.25” x .75”
 - The switch extends 2.5 “ vertically from the base.
 - When off, the center of the switch will have a height of 3 inches.

- The switch will be centered on 24" x 24" surface on the mat (see course design diagram)
- Free Play Area = 12" x 12"
- Pre-Performance Task = 12" x 24"
- Musician = 2" x 2" x 2" wooden cube (pine)
 - The musician will be placed on the center of the location on the layout.
 - https://www.amazon.com/dp/B014007SF0/ref=twister_B014VHJ8FU?_encoding=UTF8&psc=1



- Sample of wooden cube

Extra Point At the end of course Play a song

Shave and a Haircut



Time Vortex, Start – Times Square Finish - FREE PLAY, Pre-Performance areas will be drawn on the mat with LIQUID CHALK MARKERS (non-toxic, water based)



Example:

Scoring Sheet

<https://docs.google.com/spreadsheets/d/1De12raQawkULUIqtZlrdqLm3PvEqfjeM/edit#gid=577504934>

