



SCIENCE AND TECHNOLOGY COUNCIL

TAKNEEK '18

ON THE SHOULDERS OF GIANTS



Embedded

Points: 30

Event: Team Event (Max 2 teams per pool).

Team structure: Three to Five members with at least one Y18.

Problem Statement

Using a standard optical mouse as a wireless linear digital ruler.

Rules and Regulations

- A standard optical mouse will be issued by the electronics club. One per team. Wireless mice are not allowed.
- Use of any on-board computing devices such as Raspberry Pi, etc. are not allowed for the measuring system.
- Use of any open source library other than those listed in resources is restricted unless allowed by an on-mail permission by us.

General Rules

- The software written should be original and not copied from any other source.
- The teams must adhere to the spirit of healthy competition.
- The teams must not damage their fellow participants' circuit in any way.
- Judges reserve the right to disqualify any team indulged in misbehavior.
- In case of any dispute, judge's decision would be the final decision.

Detailed Description

The problem statement requires you to use a standard optical mouse to measure distance or length along a flat surface similar to a ruler.

It must consist of 2 basic parts:

- Measuring Device:** It consists of your mouse and any hardware for its signal transmission. Its motion should not be constrained. Hence the measuring system along with mouse should be wireless.
- Computing Device:** This generally consists of your laptop or mobile phone or any other computer. The computer system needs to receive the data sent wirelessly and display the distance traversed by the mouse along X-Y axis separately.



SCIENCE AND TECHNOLOGY COUNCIL

TAKNEEK '18

ON THE SHOULDERS OF GIANTS



Scoring Scheme

Ease of Use and Design quality: 15%

Accuracy of distance measurement: 70%

Quality of Loop Closure (Showing Zero Displacement if a loop is traversed) : 15%

Tie Condition Resolution

In case of a tie, the measuring devices will be compared against a 30 cm ruler and 10 reading will be noted. The team with the least RMS error will have the benefit of the tie.

Resources

<https://drive.google.com/open?id=1Rpamv7IN8NeztQBgIKRYX2pEEQAwj4KT>



Akash Jain
General Secretary, Science and Technology
Students' Gymkhana, IIT Kanpur
204, NewSAC, IIT Kanpur, Kanpur (UP) - 208016
sntsecy@iitk.ac.in | jaiakash@iitk.ac.in
+91-9450533385