



Smart India Hackathon



MHRD'S
INNOVATION CELL
(GOVERNMENT OF INDIA)





Smart India Hackathon 2019

Smart India Hackathon 2019 is a nationwide initiative launched by AICTE and MHRD aimed at providing students a platform to solve some of pressing problems we face in our daily lives, and thus inculcate a culture of product innovation and a mindset of problem solving.

The last edition of the hackathon saw over 5 million+ students from various engineering colleges compete for the top prize at 35+ locations.

In SIH 2019, the students would also have the opportunity to work on challenges faced within the private sector organizations and create world class solutions for some of the top companies in the world, thus helping the Private sector hire the best minds from across the nation.

Problem Statement Themes:

- Smart Communication
- Healthcare & Biomedical devices
- Agriculture & Rural Development
- Smart Vehicles
- Food Technology.
- Robotics and Drones
- Waste management
- Clean water
- Renewable Energy
- Security & Surveillance
- Miscellaneous

“The SIH is the largest ever Hackathon in the world and the only one to be held at the national level”



HARDWARE EDITION

2019 at a Glance



SMART INDIA
HACKATHON
2019

Grand Finale
July 8-12,
2019



9

Union Ministry &
Departments



40+

Industries



198

Total Problem
Statements



2235

Institutions



20,000+

Idea
Submissions



1,20,000+

Students
Participating



18

Nodal Centres
for Grand Finale



250

Teams Participating
in Grand Finale



1500+

Youngsters
in Finale



1.6:1

Ratio of
Male:Female
participation

Organizers



MHRD



MIC



Partners



Deloitte

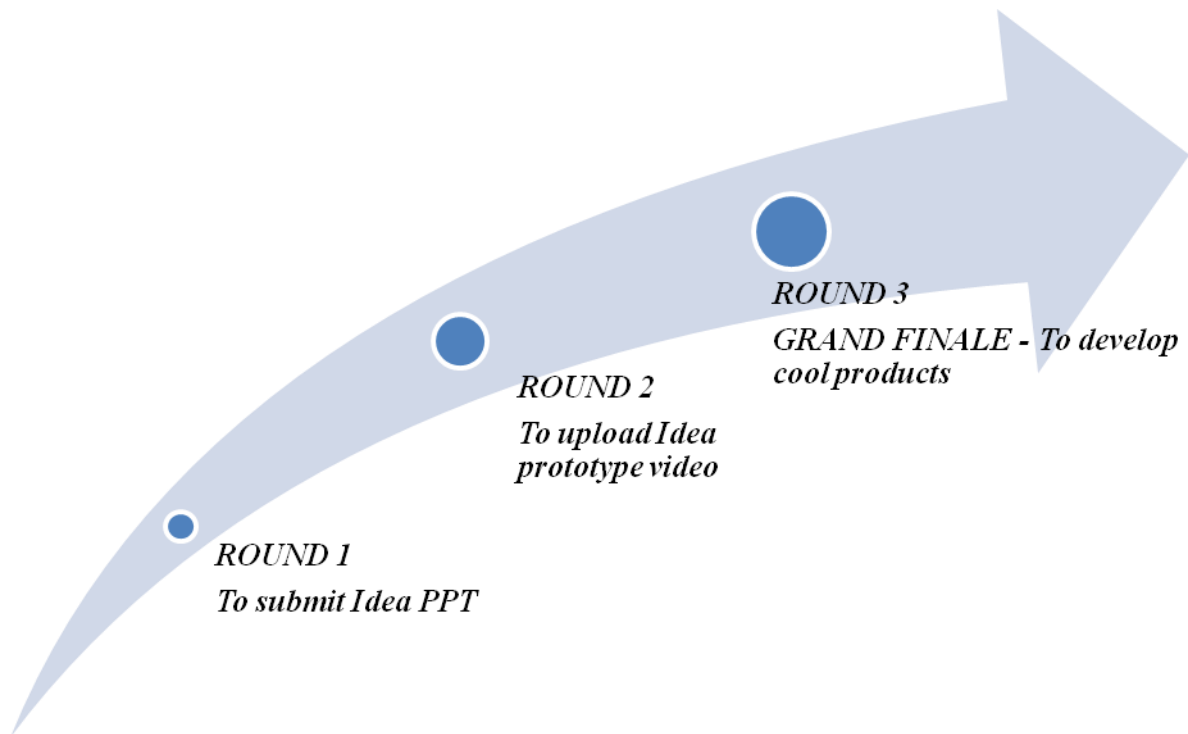


DEVNET

Communication
Partners



Rounds in sih 2019 hardware edition :



**SHORTLISTED TEAMS DISPLAYED
IN SIH PORTAL:**

ROUND 1 SHORTLISTED

Round 1 Final Results SIH2019 - Hardware Edition

Confirm Your Participation for SIH-2019 Hardware Round 2 Evaluation

Company Name	Team Name	Team Leader Name	College Name of Team
Vanderlande	YANTRAMANAV	HARINI V	PRATHYUSHA ENGINEERING COLLEGE

ROUND 2 SHORTLISTED



**MHRD'S
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Final Results - SIH 2019 - Hardware Edition

S.No	Organization	Team Name	Team Leader Name	College Name of Team
240	Vanderlande	Tech Crunch	Papiya Mandal	GSSS INSTITUTE OF ENGINEERING & TECHNOLOGY FOR WOMEN
241		YANTRAMANAV	HARINI V	PRATHYUSHA ENGINEERING COLLEGE
242		Rule crackerz	Dharani .D	SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
243		TEAM BENCHMARK	THATCHINAMOORTHY S	NADAR SARASWATHI COLLEGE OF ENGINEERING & TECHNOLOGY

ROUND 3 RESULTS

SIH2019 Grand Finale Winners - Hardware Edition

Nodal Centre	Organization	Team Name	College Name	Result
Dayananda Sagar University, Bengaluru	Bajaj Electricals Limited	Sparklers	BANNARI AMMAN INSTITUTE OF TECHNOLOGY	Winner
		TEAM WORKAHOLIC	SRI KRISHNA COLLEGE OF TECHNOLOGY	Winner
		Gnan Militants	GNANAMANI COLLEGE OF ENGINEERING	Winner
	ITC Limited	INNOVATION GEEKZ	VISHNU INSTITUTE OF TECHNOLOGY	Winner
	Kotak Mahindra Bank	Team Photon	S.R. M INSTITUTE OF SCIENCE AND TECHNOLOGY	Winner
	MAHYCO	AFICIONADOS	DR. AKHILESH DAS GUPTA INSTITUTE OF TECHNOLOGY & MANAGEMENT	Winner
		Surgical strike	VIDYA PRATISHTHAN'S KAMALNAYAN BAJAJ INSTITUTE OF ENGINEERING & TECHNOLOGY, BARAMATI	Winner
	Vanderlande	YANTRAMANAV	PRATHYUSHA ENGINEERING COLLEGE	Winner

**MAILS RECEIVED FROM SIH
DURING THE CONTEST PHASE:**



HARINI V <hari11ece@gmail.com>

Confirming participation for the SIH2019 Hardware Edition for Stage 2 evaluation

Smart India Hackathon <sih@aicte-india.org>
To: hari11ece@gmail.com

Wed, Apr 10, 2019 at 6:28 PM

Dear HARINI V, YANTRAMANAV,

Congratulations on being shortlisted for the next stage of evaluation of SIH 2019 Hardware Edition.

To confirm your participation for the Stage 2 evaluation, please give your confirmation at <https://www.sih.gov.in/hardwareResult>, **LATEST BY 16/04/2019**.

You have 1 week to confirm your participation. Failing to do so will automatically disqualify your team. It is NOT allowed to change Team Leader under any circumstances unless there is a medical emergency, but you can change up to 3 team members.

Note:

1. Please share a video of the working prototype for your idea. You can check the submission deadline at <https://www.sih.gov.in/letters/Timeline%20Hardware%20edition%202019.pdf>
2. For developing stage 2 prototype, funding will not be provided by the organizers. You may seek support from your institute.
3. Please refer to the video mentioned below to get your doubts cleared: <https://www.facebook.com/i4C.India/videos/2081593505441024/>
4. Students are recommended to nominate industry (NOT academic) experts (with 4+ years of relevant experience) as mentors for their projects.
5. Industry experts will be offered at least 5% stake if the project moves forward and a start up is formed.
6. You are required to fill and submit the Supporting document and Invention Disclosure along with the video of the prototype.
7. While preparing for the stage 2 evaluation, you would be required to provide info on the following questions:
 - a. We would like to know your learning during prototype stage?
 - b. What were your failures and how did you overcome the same?
 - c. How much of your prototype was built by the team and what all was procured ready-made from the market?
 - d. Please share your plans by end of May (prior to the grand finale in July) in regard to taking your prototype to the next level.

Best Regards,
SIH2019 Hardware Edition Team



HARINI V <hari11ece@gmail.com>

Important: SIH2019 Hardware Edition - Consent and Team Member Change Form

sih@aicte-india.org <sih@aicte-india.org>
To: hari11ece@gmail.com

Tue, Jun 11, 2019 at 10:50 AM

Dear Team Leader,

Congratulations! Your team has made it through to the Grand finale (8th-12th July, 2019) of Smart India Hackathon 2019 Hardware Edition.

In order to move forward, there are few **mandatory considerations** that are needed to be made as below:

- 1) Team leaders are required to fill 'SIH2019 Hardware Edition - Grand Finale Consent and Team Member Change Form' by visiting the below link to provide consent **latest by 15th June, 2019, 05:30 PM**.

<https://forms.gle/uTx36ZXtRpmDsFdCA>

- 2) The team leaders have to fill up the BOM form by logging in at the portal sih.gov.in with your registered e-mail id and password. The last date of submitting the BOM form is latest by **15th June, 2019, 05:30 PM**. It is mandatory to discuss with your product designer to fill up the BOM form.

Regards,

Smart India Hackathon Team



HARINI V <hari11ece@gmail.com>

Winning Letter_SIH 2019

Sarim Moin <innovationofficer2@aicte-india.org>
To: hari11ece@gmail.com

Mon, Jul 15, 2019 at 4:18 PM

Hello HARINI V,

Congratulations on winning the SIH 2019 Hardware Edition held on 8-12 July 2019 at DSU, Bangalore.

Regards,

Sarim Moin

Innovation Officer

MHRD Innovation Cell

TEAM AND PROJECT DETAILS:

OUR SIH 2019 HARDWARE EDITION TEAM:

We , A team of 6 members along with our faculty members **Prof.Gopinath and Prof.Malathi** have come up with this idea of working in this project under Robotics and Drones Theme.

TEAM MEMBERS	DEPARTMENT
HARINI V	ELECTRONICS AND COMMUNICATION
PUSHPAKUMAR M	ELECTRONICS AND COMMUNICATION
NIVAS KUMAR N	ELECTRONICS AND COMMUNICATION
JOTHESH S P	COMPUTER SCIENCE
VIGNESH K	MECHANICAL
VIGNESH R	MECHANICAL

PROBLEM STATEMENT:


- + Most distribution centers (warehouses) uses a goods-to- person picking model and automated system to compile orders .**
- + A latest available technology component to be used to Interface with robotic item picking and operator.**
- + Remote operation by operator of these robotic items picking using the control devices like joystick, remote hand. The operator should be able to visualize this process by camera.**

*Our Problem statement provided by Organization **Vanderlande***


<u>VANDERLANDE</u>	
Type	Private limited company
Industry	Material handling Logistics automation
Headquarters	Veghel, Netherlands
Area served	Worldwide
Products	Warehouse automation Baggage handling systems Parcel & postal sorting systems

- Vanderlande is a material handling and logistics automation company based in Veghel, Netherlands.
- Vanderlande's baggage handling systems move 4.2 billion pieces of luggage around the world per year, in other words 11.5 million per day. Its systems are active in 600 airports including 14 of the world's top 20
- In 2019, the company reported revenue of Euro 1.517 billion making it the world's fifth-largest materials handling systems supplier.
- Specifically, Vanderlande makes baggage handling systems for airports. Currently, more than 600 airports in the world are using Vanderlande's baggage handling systems, including 17 of the 25 largest airports in the world

SOLUTION PPT PROVIDED

 ESTD. 2001

PRATHYUSHA
ENGINEERING COLLEGE

 SMART INDIA
HACKATHON
2019

VANDERLANDE

TELEPICKING INTERFACE WITH ITEM PICKING ROBOTICS

Ministry/ Organisation : Tamil Nadu

Problem statement :

Most distribution centers (warehouses) uses a goods-to-person picking model and automated system to compile orders. A latest available technology component to be used to Interface with robotic item picking and operator. Remote operation by operator of these robotic item picking using the control devices like joystick, remote hand. The operator should be able to visualize this process by camera.

Team leader : Harini V

Team name: Yantramanav

College code : 1110

IDEA DETAILS

Problems faced

1. Grasp only the items which has large surface area
2. Difficult to control the robot from a distance
3. Deploying Operator near the process area to monitor the process

Tools for solution



Solutions designed

1. Hybrid grippers to grasp the items with various shape and sizes orientation
2. Control the robot using remote hand (JOYSTICK) and speech recognition
3. Operator can monitor the process from anywhere using camera

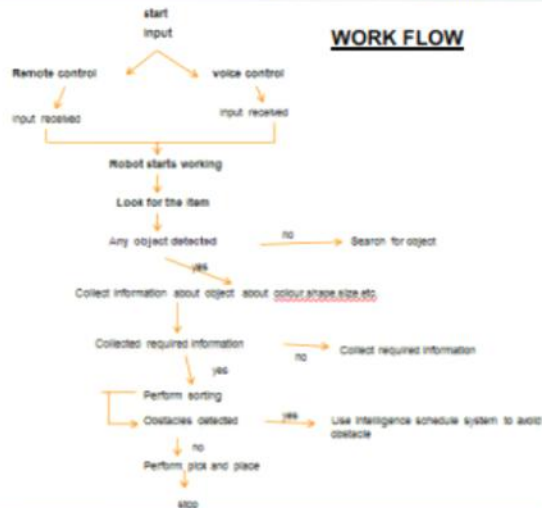
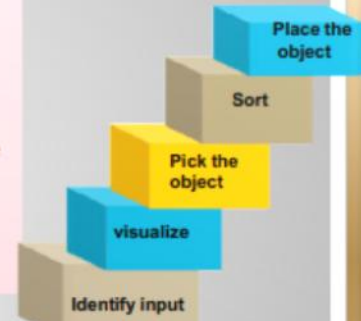


IMAGE PROCESSING : It helps to observe the objects that are not visible. Distinguish the objects in an image.



REMOTE CONTROL: Joysticks combine two variable resistors called potentiometers. It has 2 directions x and y axis when the button is tilted it sends the commands and raspberry pi receives it.



PICK AND PLACE: the operation is due to motor and well designed hybrid gripper.



SORTING may not always be the most difficult tasks, but they can certainly get tedious. The robot is trained to sort according to the material which it takes sorting.

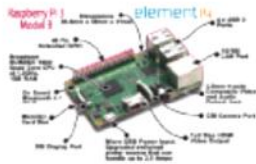


VOICE RECOGNITION: The computer analyses voice of human. Here the voice is converted into text with the help of GOOGLE ASSISTANT.

TECHNOLOGY STACK

HARDWARE:

1. Raspberry pi model 3
 - Quadcore
 - 1.2GHz
 - 1GB RAM



SOFTWARE:

1. Python 2.7

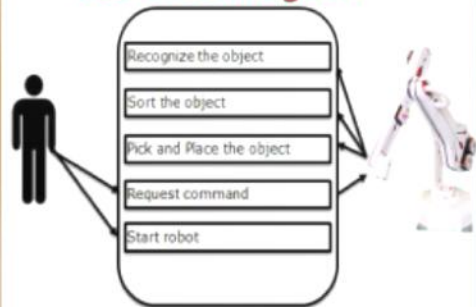
MODULES:

1. tensor flow
2. numpy
3. scipy
4. opencv
5. pillow
6. matplotlib
7. h5py
8. keras

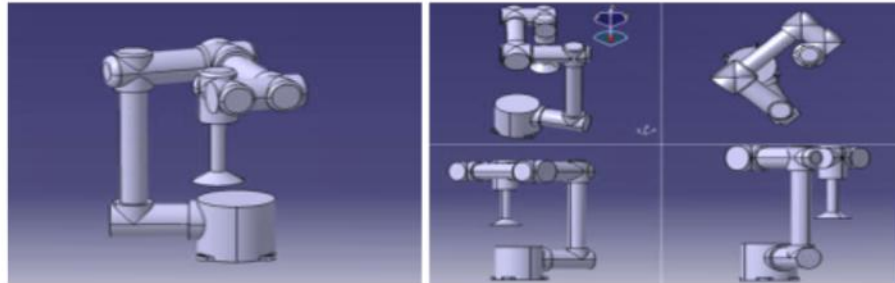


APPROACH DETAILS

Use Case Diagram



3D VIEW OF ROBOT



SHOW STOPPER

- **Speech recognition process is disturbed due to quality of components .**
- **Speech recognition process is affected due to environmental factors (noisy,echo,etc) also which modify the perception of the sound..**
- **High degree of freedom sometimes makes robot loses its efficiency in picking and placing objects.**
- **Distortion in camera lens**
- **Changes in lightening**
- **Changes in view angles with up to 30-40 degrees results in error or poor image recognition.**
- **Instability of motor results in poor performance and delay.**

DEPENDENCIES

It depends on the following things:

- **Noise filters- to get clear voice**
- **RF control joystick-to control the robot**
- **Camera- to visualize**
- **Light-for clear and bright image**

TEAM PHOTO





PRATHYUSHA ENGINEERING COLLEGE

CONGRATULATIONS !!



பெங்களூருவில் நடைபெற்ற ஸ்மார்ட் இந்தியா ஹாக்கத்தான் 2019 வன்பொருள் பதிப்பு குறித்த மாதிரி உருவாக்கும் இறுதி போட்டியில், அரண்வாயல் பிரதியுஷா பொறியியல் கல்லூரி யன்ட்ராமானவ் என்ற மாணவர்கள் குழு வெற்றிப்பெற்று ரூ.75 ஆயிரம் பரிசு வென்றது. அவர்களை கல்லூரி தலைவர் ராஜாராவ், ஆலோசகர் வாசு, பள்ளி முதல்வர் ரமேஷ், டீன் தயாகரன் ஆகியோர் வாழ்த்தினர்.

முரசு Sun, 21 July 2019
tm.dinakaran.com/c/41633375

Glad to share that our PRATHYUSHA team has won the
FIRST PRIZE in SMART INDIA HACKATHON 2019
(HARDWARE EDITION) Grand Finale at DSU, Bangalore and
won prize Rs. 75,000/-



TNEA Counselling 1110
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044-37673767,9843192763