Under the aegis of Vijayam Educational Trust
CATALYST COLLEGE
(A Unit of CIMAGE Group of Institutions)
Institution approved by Education Department, Government of Bihar, Affiliated to Patliputra University, Patna

Ref: CC/WRSP/20/19/24

Date: 23-Sep-2020

NOTICE

This is to inform all the Students that a Live session on Robotics: Innovative Future of Technology will be organized on 12.10.2020 from 9:30 AM to 5:30 PM by Catalyst College.

The workshop is completely free, and no money will be charged for the Training or Certification.

Interested students are instructed to contact the Activity In-Charge / Class Coordinator for more details and their registration.

By the order of

Principal

Principal
CATALYST COLLEGE
Plot No.- C-16(P) Patliputra Industrial Area
Patliputra, Patna-13

Plot No.C16(P), Patliputra Industrial Area
Patliputra, Patna- 800013
(+91) 7250767676
megha@cimage.in

Date:12-10-2020

Workshop Title

Robotics: Innovative Future of Technology

Number of Students Participated: 58

Objective:

This workshop aims to provide an introduction to the world of robotics, showcasing its practical applications, innovations, and potential to transform industries. Whether you're a beginner, enthusiast, or professional, this session will cover the fundamentals of robotics, key technologies driving the field, and how to leverage robotics for business, education, or personal growth. Attendees will also get hands-on experience in building simple robots and learn how to adapt to emerging trends in this rapidly evolving industry.

Model 1. Welcome & Introduction

- Introduction to the session, objectives, and how participants can benefit from the workshop.
- Introduction to the Speaker(s): A brief introduction to the instructor(s) or facilitator(s), their expertise in robotics, and the industries they have worked in.
- What to Expect: Overview of the topics covered in the workshop, including practical demonstrations, theory, and Q&A.

Model 2. Understanding Robotics: An Introduction

  - The definition of robotics and the scope of its applications.

Principal
CATALYST COLLEGE
Plot No.- C-16(P) Patliputra Industrial Area
Patliputra, Patna-13

- Differentiating between robots and automation systems.

- Key Components of a Robot
  - Sensors: How robots perceive their environment (e.g., cameras, temperature sensors, motion detectors).
  - Actuators: Motors and servos that allow robots to move and interact.
  - Control Systems: The brains of the robot, including algorithms and programming languages.
- Types of Robots ○ Industrial Robots: Used in manufacturing and assembly lines. ○ Service Robots: Healthcare, hospitality, and customer service.
  - Autonomous Robots: Self-driving cars, drones, and AI-powered robots. ○ Humanoid Robots: Robots designed to resemble humans in form and function.
- The Evolution of Robotics ○ From early mechanical robots to modern AI-driven systems.
  - The role of robotics in automation and Industry 4.0.

Model 3. Technologies Driving the Future of Robotics (30 min)

- Artificial Intelligence (AI) and Machine Learning:
  - How AI is enabling robots to perform complex tasks such as decisionmaking, learning from experience, and improving over time.
  - Examples: Robot vision, natural language processing, and object recognition.
- Robotic Process Automation (RPA):
  - How RPA is transforming business operations in sectors like finance, HR, and customer service.
- Internet of Things (IoT) and Connectivity:
  - How IoT enhances robots with real-time data from connected devices, creating smarter, more efficient systems.

    Examples of connected robots in healthcare, manufacturing, and logistics.

- Autonomous Robotics:
    - The importance of self-navigation and decision-making in autonomous robots.
    - Exploration of robots in real-world applications: autonomous vehicles, drones, and warehouse automation.
- Advanced Robotics: Exoskeletons and Bionics:
    - The intersection of robotics and healthcare: How robots are improving mobility for individuals with disabilities.
    - Current advancements in wearable robotics.

Model 4. Hands-On Session: Building Simple Robots (45 min)

- Introduction to Robot Building Kits:
    - A brief overview of basic robotics kits (e.g., Arduino, Raspberry Pi, LEGO Mindstorms) and the tools needed to get started.
- Step-by-Step Instructions:
    - Robot Assembly: Walkthrough on how to assemble a basic robot (e.g., a simple wheeled robot, arm robot, or a light-following robot).
    - Programming the Robot: Using a beginner-friendly programming environment (e.g., Blockly, Scratch, or Python) to program the robot's movements and reactions.
- Practical Applications:
    - How these basic robots can be adapted to real-world challenges (e.g., warehouse automation, agricultural robots).
- Debugging & Troubleshooting:
    - Common challenges when building and programming robots and how to troubleshoot them.

Model 5. Robotics in Industry: Transforming Sectors (40 min)

- Robotics in Manufacturing

- How robots are improving efficiency in industries like automotive manufacturing, electronics, and consumer goods.
- The role of collaborative robots (cobots) working alongside human workers.

- Robotics in Healthcare
  - Surgical robots: How robots are assisting in precision surgery (e.g., da Vinci surgical system).
  - Rehabilitation robots: Helping patients recover mobility after injury or stroke.
- Robotics in Logistics and Supply Chain
  - How robots are used in warehouses for sorting, packaging, and delivering goods.
  - Autonomous delivery robots and drones.
- Robotics in Agriculture ○ The role of robots in automating farming tasks such as planting, harvesting, and monitoring crops.
  - Drones for precision agriculture.
- Robotics in Service Industries ○ Robots in hospitality, cleaning, and customer service. ○ Case studies of companies using robots for public engagement (e.g., hotel concierge robots).

Model 6. The Future of Robotics: Trends and Innovations (30 min)

- The Role of Artificial Intelligence in Robotics:
  - Deep learning, computer vision, and natural language processing as the future of robotics.
- Robotics in Space Exploration:
  - Robots that explore the moon, Mars, and beyond, including robotic rovers and space probes.
- The Ethics of Robotics:

  Addressing the societal impact of robotics: job displacement, security, privacy, and ethical concerns surrounding AI decision-making.

-
    - How governments and companies are addressing these challenges.
- The Rise of Human-Robot Collaboration:
    - How robots will work alongside humans in diverse settings (e.g., hospitals, construction sites).
- Future Career Opportunities in Robotics:
    - Emerging fields within robotics: robotics engineering, AI research, automation design, and ethics.

Key Takeaways: ○ The potential of robotics to transform industries, improve efficiency, and enhance our lives. ○ The importance of continuous learning in the rapidly changing field of robotics

Principal
CATALYST COLLEGE
Plot No.- C-16(P) Patliputra Industrial Area
Patliputra, Patna-13

Workshop on Robotics

Date:-12/10/2020

Principal
CATALYST COLLEGE
Plot No.- C-16(P) Patliputra Industrial Area
Patliputra, Patna-13

Workshop on Robotics

Date:-12/10/2020

Principal
CATALYST COLLEGE
Plot No.- C-16(P) Patliputra Industrial Area
Patliputra, Patna-13

Workshop on Robotics Date:-

12/10/2020

Principal
CATALYST COLLEGE
Plot No.- C-16(P) Patliputra Industrial Area
Patliputra, Patna-13

Registration

For Workshops/Seminars/Conferences during Academic Year 2019-2020

Workshop on Robotics

(12 October 2020)

S. No.	ID	Name of the student	Student's Signature
1	445-6981	Aditya Kumar Sahni	Aditya Kumar Sahni
2	445-6762	Akshay Verma	A. Verma.
3	445-6915	Aman Kumar Gupta	A. K. Gupta.
4	445-7272	Amit Kumar Thakur	Amit Kr Thakur
5	445-7443	Ashutosh Kumar	A Shutosh.
6	445-6725	Bipul Kumar	Bipul
7	445-6767	Gautam Kumar Solanki	G. K. Solanki
8	445-6951	Golu Kumar	Golu Kr
9	445-6928	Harsh Raj	Harsh Raj
10	445-6937	Kamya Rani	Kamy Rani
11	445-6939	Karishma Kumari	Karishma Kumari
12	445-6750	Komal Kumari	Komal Kri
13	445-7390	Krishn Mohan Kumar	Krish Mohan Kr
14	445-7250	Manish Kumar	Manish.
15	445-6977	Nur Alam	Nur Alam
16	445-6862	Prakash Raj	Prakash Raj
17	445-6853	Prashant Kumar	Prashant.
18	445-6974	Prince Kumar Singh	P. K. Singh.
19	445-6730	Raghav Raman Choudhary	R. R. Choudhary.
20	445-6747	Ranjeet Kumar Yadav	Ranjeet Kumar Yadav
21	445-6733	Raunak Rani	Raunak Rani.
22	445-6854	Sanjeev Kumar	Sanjeev Kr
23	445-7423	Satish Kumar	Satish Kr.
24	445-6883	Saurav Kumar	Saurav Kumar
25	445-6761	Shankar Kumar	Shankar Kr.
26	445-6993	Shiv Jee Kumar Yadav	Shiv Jee Kr Yadav
27	445-6728	Shivam Shekhr	Shivam Shekhr
28	445-7029	Sonal Kumar Singh	S. K. Singh.
29	445-6770	Subham Kumar	Subham.
30	445-6742	Subham Shankar	S. Shankar
31	445-7604	Tanuja	Tanuja
32	445-6991	Ujjval Kumar Verma	Ujjval Kumar

CATALYST COLLEGE PATNA

33	445-7001	Vikash Kumar	Vikash Kumar
34	445-7023	Vikash Kumar	Vikash Kr
35	445-6739	Vinayak Gupta	Vinayak
36	445-6759	Vishal Pandey	Vishal Pandey
37	45-7432	Bolbam Kumar	Bolbam.
38	445-6741	Kanish Kumar	Kanish Kumar
39	445-6948	Manish Raj	Manish Raj
40	445-6737	Manisha Kumari	Manisha Kri
41	445-6933	Ravnak Kumar	Ravnak Kr
42	445-7275	Aaseen Alam	Aaseen Ala.
43	445-7343	Akshat Raj	Akshat Raj.
44	445-7027	Anish Raj	Anish Raj
45	445-7345	Avinash Kumar	Avinash Kr
46	445-7384	Deeplal Ram	Deeplal Ram
47	445-7392	Kajal Kumari	Kajal Kumari
48	445-7033	Kajal Kumari	Kajal Kri
49	445-6886	Kamlesh Kumar Singh	K. Kumar
50	445-7377	Kundan Kumar	Kundan Kuma
51	445-7039	Manish Kumar	Manish Kr.
52	445-7483	Md Arbaz Ansari	Md. Arbaz.
53	445-7252	Md Faizan	Md Faizan
54	445-7430	Mukesh Kumar Iha	M. K. Jha.
55	445-7469	Nitish Kumar	Nitish Kr.
56	445-7379	Pankaj Kumar	P. Kr.
57	445-7375	Prashant Kumar	Prashant.
58	445-7041	Rahul Kumar	Rahul.

(Sign.)
Course Coordinator