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-NOT\21\22\27

Date: 05-Dec-2021

NOTICE

This is to inform all the Students that a workshop on Robotics for the Future: Adapting to Changing Technology in a Digital World will be organized on 22.12.2021 from 9:30 AM to 5:30 PM in the auditorium of Catalyst College.

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

Interested students are instructed to meet 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: 22-12-2021

Workshop Title:

Robotics for the Future: Adapting to Changing Technology in a Digital World

Number of Students Participated: 48 Objective:

This workshop is designed to introduce participants to the rapidly evolving world of robotics, explore the latest technological advancements, and discuss how businesses and individuals can adapt to the impact of robotics on various industries. Attendees will learn about the current state of robotics, its applications, and how they can leverage robotics to enhance productivity, efficiency, and innovation in the digital age.

Model 1. Introduction to Robotics: An Overview of Current Trends

- What is Robotics?: Defining robotics and understanding its core components (sensors, actuators, controllers, and AI). ○ Overview of robot types: Industrial robots, collaborative robots (cobots), autonomous robots, and service robots.
- The Evolution of Robotics: A historical perspective on how robotics has evolved from early mechanical devices to today's highly intelligent, autonomous systems. ○ Key milestones in robotics development (e.g., industrial robots in manufacturing, humanoid robots, AI integration).
- The Digital Transformation and Robotics: How robotics is driving change in various industries by automating tasks, increasing precision, and improving efficiency.
    - The relationship between robotics, AI, and machine learning.

Model 2. Key Applications of Robotics in Various Industries

- Manufacturing and Industry 4.0:
    - How robots are revolutionizing the manufacturing process: automation, assembly lines, quality control, and supply chain management. ○ The role of cobots (collaborative robots) in supporting human workers and increasing productivity.

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- Healthcare Robotics:
    - Robots in surgery, diagnostics, rehabilitation, and elderly care. ○ The impact of robotic exoskeletons and prosthetics on improving mobility for patients with disabilities.
- Logistics and Warehousing:
    - The role of robotics in warehouses (e.g., Amazon's use of Kiva robots), material handling, and delivery automation.
    - Autonomous drones and vehicles in the transportation sector.
- Agriculture and Farming:
    - Robotics in precision agriculture: planting, weeding, harvesting, and crop monitoring.
    - Drones and robots used for pest control, soil analysis, and yield prediction.
- Service Robotics:
    - Robots in customer service, hospitality, and retail (e.g., robot assistants, automated checkout systems).
    - The rise of robots in hospitality for tasks like food delivery, cleaning, and concierge services.

Model 3. Robotics and Artificial Intelligence: The Power of Automation

- How AI Enhances Robotics: The role of AI, machine learning, and computer vision in creating autonomous robots capable of decision-making.
    - Examples of AI-powered robots: self-driving cars, robots with deep learning capabilities, and autonomous drones.
- Human-Robot Interaction (HRI): How robots are being designed to interact safely and effectively with humans in collaborative environments.

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- The importance of HRI in applications like healthcare, manufacturing, and customer service.

Future of Robotics with AI: A glimpse into future advancements—how robots could perform more complex tasks, make decisions in real-time, and work alongside humans seamlessly.

Model 4. Robotics in the Workforce: Job Impact and the Future of Work

- The Impact of Robotics on Jobs: Understanding how robotics is changing the job landscape.
    - Will robots replace jobs, or will they create new opportunities?
    - Which industries are most likely to see job displacement, and which will benefit from robotics?
- Upskilling and Reskilling for a Robotic Future: Preparing the workforce for the age of automation by equipping individuals with the necessary skills.
    - The importance of STEM education, robotics training programs, and lifelong learning. ○ How businesses can support their employees in adapting to automation and robotics.
- Human-Robot Collaboration: How robots are not just replacing jobs but also enhancing human capabilities by taking over repetitive or hazardous tasks.
    - Case studies of successful human-robot collaboration in sectors like manufacturing, healthcare, and logistics.

Model 5. Developing and Implementing Robotics Solutions in Business

- Assessing Your Business Needs: How to evaluate whether robotics can enhance productivity in your business. ○ Identifying processes that are ripe for automation (e.g., repetitive tasks, precision-based work, data processing).
- Choosing the Right Robotics Solution: An overview of the types of robots and automation systems available for different industries.

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    Factors to consider when selecting a robotic system: cost, scalability, technical support, ease of integration, and safety.

  Building a Robotics Strategy: Creating a roadmap for integrating robotics into your business.

    - From pilot projects to full-scale implementation: Key steps for success.
    - Managing change and encouraging adoption of robotics in your organization.

- ROI and Performance Metrics: How to measure the return on investment (ROI) for robotics solutions. ○ Key metrics to track: productivity improvements, cost savings, downtime reduction, and quality control.

Model 6. Robotics and Ethics: Navigating the Challenges

- Ethical Considerations in Robotics:
    - The ethical implications of robots replacing human jobs, privacy concerns with robots in public spaces, and decision-making in autonomous systems.
- Robotics and Safety: Ensuring that robots work safely alongside humans.
    - Safety standards, regulations, and best practices for robotic system deployment. ○ The role of safety protocols in industries like manufacturing, healthcare, and logistics.
- Social Impact of Robotics: How robotics can improve quality of life (e.g., healthcare, elderly care, disaster response) and the potential for robotics to contribute positively to society.

Model 7. The Future of Robotics: Trends and Innovations

- Emerging Robotics Trends: A look at the cutting-edge innovations shaping the future of robotics.
    - Soft robotics, bio-inspired robots, autonomous mobile robots (AMRs), and humanoid robots.

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- Robotics in Space Exploration: How robots are being used for lunar missions, Mars rovers, and space research.

    The role of robotics in future space missions, from exploration to colonization.

    Quantum Computing and Robotics: The potential for quantum computing to enhance the capabilities of robots, including faster processing, more sophisticated decision-making, and real-time learning.

- The Role of 5G in Robotics: How 5G connectivity will enable real-time communication and remote control of robots, improving efficiency in industries like logistics and healthcare.

Key Takeaways:

- Understanding Robotics: A foundational understanding of robotics, its types, and its applications across industries.
- Practical Insights: Learn how businesses can integrate robotics into their operations for efficiency, safety, and growth.
- Future Vision: Insights into emerging trends in robotics, AI, and how they will shape the digital future.
- Adapting to Change: How to prepare for and adapt to the impact of robotics on jobs and business operations.
- Implementation Guides: Step-by-step guides to help businesses assess and implement robotics solutions.
- Laptop/Device: Bring a laptop or device for note-taking and participating in interactive activities.
- No Prior Knowledge Required: The workshop is beginner-friendly, with a focus on practical insights and future trends.

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Registration

For Workshops/Seminars/Conferences during Academic Year 2020-2021

Robotics for the Future: Adapting to Changing Technology in a Digital World

(22 December 2021)

S. No.	ID	Name of the student	Student's Signature
1	445-6974	Prince Kumar Singh	Prince kr. Singh
2	445-6730	Raghav Raman Choudhary	Raghav Raman Choudhary
3	445-6747	Ranjeet Kumar Yadav	R. K. Yadav.
4	445-6733	Raunak Rani	Raunak Rani
5	445-6854	Sanjeev Kumar	Sanjeev Kumar
6	445-7423	Satish Kumar	Satish Kumar
7	445-6883	Saurav Kumar	Saurav
8	445-6761	Shankar Kumar	Shankar Kumar
9	445-6993	Shiv Jee Kumar Yadav	Shivjee kr. Yadav.
10	445-6728	Shivam Shekhr	Shivam
11	445-7029	Sonal Kumar Singh	Sonal Kumar Singh
12	445-6770	Subham Kumar	Subham
13	445-6742	Subham Shankar	Subham
14	445-7604	Tanuja	Tanuja
15	445-6991	Ujjval Kumar Verma	Ujjval Kumar Verma
16	445-7001	Vikash Kumar	V. kr.
17	445-7023	Vikash Kumar	Vikash.
18	445-6739	Vinayak Gupta	V. Gupta.
19	445-6759	Vishal Pandey	Vishal pandey
20	45-7432	Bolbam Kumar	Bolbam kr.
21	445-6741	Kanish Kumar	Kanish kumar
22	445-6948	Manish Raj	Manish Raj
23	445-6737	Manisha Kumari	manisha.
24	445-6933	Ravnak Kumar	Ravnak kr.
25	445-7275	Aaseen Alam	Aaseen.
26	445-7343	Akshat Raj	Akshat Raj
27	445-7027	Anish Raj	Anish
28	445-7345	Avinash Kumar	Avinash kumar
29	445-7384	Deeplal Ram	Deeplal ram.
30	445-7392	Kajal Kumari	Kajal
31	445-7033	Kajal Kumari	Kajal
32	445-6886	Kamlesh Kumar Singh	Kamlesh Kumar

33	445-7377	Kundan Kumar	Kundan
34	445-7039	Manish Kumar	Manish Kr.
35	445-7483	Md Arbaz Ansari	Md Arbaz Ansari
36	445-7252	Md Faizan	Md. Faizan.
37	445-7430	Mukesh Kumar Jha	Mukesh
38	445-7469	Nitish Kumar	Nitish Kumar
39	445-7379	Pankaj Kumar	Pankaj
40	445-7375	Prashant Kumar	Prashant Kumar
41	445-7041	Rahul Kumar	Rahul
42	445-6979	Ramesh Kumar	Ramesh Kumar
43	445-7363	Ramesh Ranjan	Ramesh Ranjan.
44	445-7347	Shakir Ansari	Shakir Ansari
45	445-7438	Sunny Kumar	Sunny
46	445-7471	Tannu Priya	Tannu Priya
47	445-7485	Deepankar Kumar	Deepankar Kr.
48	445-7361	Poonam Kumari	Poonam Kri.

(Sign.)

Course Coordinator