VIDYA JYOTHI INSTITUTE OF TECHNOLOGY
(Autonomous)
Department of Artificial Intelligence
(Approved By A.I.C.T.E., New Delhi, Permanently Affiliated to JNTU, Hyderabad)
(Aziz Nagar, C.B. Post, Hyderabad -500075)

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ROBOTICS LAB

Course Outcome :

- Will be able to develop 3 different basic autonomous robots which are guided using sensors.
- Able to create line follower Robot
- Able to develop robot which can avoid/follow obstacles or light. Robots developed as part of this course

Week - 1 & 2 : Understanding Sensor Based Robot and robot making kits

1. Line Follower Robot
2. Phototropic/Obstacle Follower Robot
3. Photophobic/Obstacle Avoider Robot

Be thorough with Sensor Guided Robotic Kit and Arduino

- Arduino Uno
- Arduino USB Cable
- L293D Motor Driver Circuit
- Digital IR Sensors - 2 Nos.
- DC motors - 2 Nos.
- Wheels for Motors - 2 Nos.
- Castor Wheels - 1 No.
- Breadboard - 1 No.
- Chassis - 1 No.
- U Clamps - 2 Nos.
- Wire stripper - 1 No.
- Screwdriver - 1 No.
- Connecting Wires & Other miscellaneous items
- Multi meter and Battery (6F22 9V) are required

Week – 3 & 4 : Graphical Programming for Beginners

- Programming Arduino through Blocks
- Arduino Programming
- Introduction to Arduino IDE
- Structure of Arduino Programming
- First program in Arduino: Blinking LED

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Week - 5 : Sensing Light using IR Sensors

- **Learn**: Sensors - Types & Working
- **Learn**: Semiconductors
- **Learn**: Working of IR Sensors
- **Do**: Interface Digital IR sensor with Arduino & Read Data
- **Do**: Calibration of Digital IR Sensor
- **Do**: Design Scratch Program to Control LED using IR Sensor
- **Do**: Design Arduino Sketch to Control LED based on Line Detection
- **Do**: Design Arduino Sketch to Control LED based on Obstacle Detection

Week - 6 : Motors & Motor drivers in Arduino based Robots

- **Learn**: DC Motors & their Working
- **Learn**: Motors & Motor Drivers for the Arduino Robot
- **Do**: Interface & Test Motor with Arduino
- **Do**: Control Motor using Arduino
- **Do**: Design Sketch to Control Motor

Week - 7 : Arduino based Robots - Build your Robot

- **Learn**: Structural Design of a Robot
- **Do**: Assemble the Chassis of the Robot
- **Do**: Fixing the Wheels to the Robot Chassis
- **Do**: Final Chassis Assembly of the Robot
- **Do**: Mount Arduino on Chassis & Interface Motor Driver

Week - 8 : Make Robot move

- **Learn**: Programming Logic for Robot Motion
- **Do**: Design Sketch to Move the Robot

Week - 9 : Programming the line follower Robot

- **Learn**: Line Follower Robot - Programming Logic
- **Do**: Design Scratch Program for Line Follower Robot

Week - 10 : Testing the line follower Robot

- **Do**: Line Follower Robot - Placement of Components & IR Sensors
- **Do**: Line Follower Robot - Final Connections & Calibration
- **Do**: Line Follower Robot - Test your Robot
- **Do**: Line Follower Robot - Test your Robot with Arduino Sketch

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Week - 11 : Programming and Testing the Obstacle avoider Robot

- **Learn**: Obstacle Avoider Robot - Programming Logic
- **Do**: Design Arduino Sketch for Obstacle Avoider Robot
- **Do**: Obstacle Avoider Robot - Placement & Connection of IR Sensors
- **Do**: Obstacle Avoider Robot - Test your Robot with Arduino Sketch

Week - 12 : Programming and Testing the Obstacle follower Robot

- **Learn**: Obstacle Follower Robot - Programming Logic
- **Do**: Design Arduino Sketch for Obstacle Follower Robot
- **Do**: Obstacle Follower Robot - Test your Robot with Arduino Sketch

Week – 13 – 16

Creating innovative Robots for solving real life problems. Can be performed in a group of 3-4 students

BOS Members' Signatures :-

1. **DR. SIDDHARTHA GHOSH** Chairman , BOS for AI&DS, VJIT	2. **DR. OBV RAMANAIAH** JNTUH Nominee	3. **DR. MV KRISHNAMURTHY** MD, UOSD Pvt. Ltd.	4. **MR. PRASAD YERRAMSETTI** Lead Program Manager in Data Science, Microsoft
5. **MR. GOPALKRISHNA MADDIPATLA** Director of Intelligence Automation (ML) Practice, EPAM Solutions, Hyderabad	6. **DR. PADMAJA SAVARAM**, HOD, CSE, Keshav Memorial Institute of Technology, Hyderabad	7. **DR. V. VIJAYA KUMAR** DEAN CSE & IT, Anurag Group of Institutes	8. **DR. B. VIJAYA KUMAR** HOD, CSE, VJIT
			DATE OF BOS MEETING
9. **DR. K. VASANTH** HOD, ECE, VJIT	10. **DR. D ARUNA KUMARI** Professor in CSE, VJIT	11. **PROF. B. SRINIVASULU** HOD, IT, VJIT	**– 06 – 2020**