Details for Autonomous Line Tracer Robot with AVR controllers Workshop

Robotics is an ever-evolving domain, which requires constant innovation and technology advancements.

Contents and Duration:

The workshop will be a two day workshop divided into four sessions each covering exhaustive theory and practical. The content of workshop is as follows:

1. Basic electronics components and practical implementation
2. Sensors and Circuit Designing
3. Autonomous Robotics : Micro-Controllers and its Programming
4. Line Tracer Robot Implementation

DAY-1:

Session1 - Manual Robotics:

Theory: As it's a starting phase of a new learning model(practical oriented learning), we will acknowledge our students about basic electronic elements and how they can be used in circuit applications. So we will go through with a complete exhaustive session including some hands on practical's to direct there theoretical knowledge towards practical work going on industries.

Session 2 - Sensors and Circuit Designing:

Theory: Basics of circuit designing will be covered in the session. We will discuss the construction and working of an IR sensor module with complete details regarding how one can make his own sensor module at a very cheap cost. The major topics that will be covered are: Introduction to Circuit designing, need and importance in autonomous robotics, brief description of various elementary electronics devices, Construction and working of IR sensor module, etc.
Hands on: Implementing an IR sensor module using discrete components.

DAY-2

Session 3 - Autonomous Robot:

Theory: This session will introduce autonomous robotics; it will cover the basic details of a general Autonomous Robot and will discuss the intricacies involved. This will exhaustively cover Micro-controller application in the autonomous robotics. It would cover the basics of micro-controllers, their use, application and advantage in an autonomous robotics. It will also include introduction to micro-Controller programmers and programming software.

Lab sessions: Demonstration of SML Kit, programming Atmel micro-controllers, implementing some basic programs on the micro-controller.

Session 4 - Line Tracer Robot Implementation

This session will be a complete hands-on session. In this session all the learning from the last three sessions will be put together to finally construct an Line Tracer robot. All the necessary components required for the workshop shall be provided with the workshop kit that will be provided to each team.

Workshop Fee:

1. The fee for the workshop is Rs.1200/- per participant. So it will cost. Rs.4800/- per group (containing 4 members)
2. Kits will be provided permanently to each group. Also includes certificate by IIT Indore to every participant individually.

Kit Content (provided to each group):

Manual Robo Kit

Component	Quantity
RoboSwitch (DPDT)	2
Chasis	1
Motors	2
Tyres	2
Li-ion Battery	1
Remote Box	1
9 Volt Battery	2
Battery Cap	2
Insulation Tape	1

Circuit Designing Kit

Component	Quantity
BreadBoard	1
Wire cutter	1
IC 7812	1
IC 7805	1
Motor Driver l293D	1
IC LM 324	1
IC ULN2003	1
IC Max232	1
Resistor Box	1
Capacitor Box	1
Diode Box	1
5mm IR pair (Transmitter Receiver pair)	1
Red Led	5
White Led	5
IR Sensor line array	1
Connecting Wires	3ft

Microcontroller and its burner

Component	Quantity
Programmer Board	1
Connectors	3
IC ATMEGA8L	1

Reference Study Material

Component	Quantity
Software CD	1
Micro-controller Programming Manual	1
Basic Construction of Circuits/Robots	1

Terms and Conditions:

1. Workshop will be two days exhaustive workshop which includes Theory, tutorial and Practical Sessions.
2. The fee for the workshop is Rs.1200/- per participant. We will allow them to work in a group (containing maximum of 4 members).
3. KITS, Certificates and Handbooks will remain with participants.

Advantages of the Workshop

1. Apart from theoretical knowledge, introduction to practical approach in the field of Embedded Systems and Robotics for engineering students.

2. Students will develop a project after completion of the training (helpful for their major projects or can be used as their major projects.

3. Making complete environment as learning with fun so that student can feel free for their doubts in complete training session.

4. Will learn Team working, Project development & management.