

RAI 843: Sensors and Sensing

Handbook of Modern Sensors. By Jacob Fraden, Springer, 2010.

ISBN-13: 978-1-4419-6465-6

Reference Books

2. Introduction to Autonomous Mobile Robots. By Roland Siegwart and Illah R. Nourbakhsh, The MIT Press, 2004. ISBN-10: 0-262-19502-X, ISBN-13: 978-0-262-19502-7
- Probabilistic Robotics. By Sebastian Thrun, Wolfram Burgard, and Dieter Fox, MIT Press (2006)
- ISBN: 978-0-262-20162-9.

Objective

3. This course focuses on various sensors used for Robot Navigation and Control. Its objective is to teach students about sensing and modeling surrounding environment for motion planning and navigation.

Course Outcome

4. This course will furnish the students with an understanding of the design and working of sensors for Robotics while also teaching them about the techniques needed for signal processing of the sensor data.

Course Outline:

Topics	Allocated Periods
<ul style="list-style-type: none"><input type="checkbox"/> <u>Sensor Characteristics</u><ul style="list-style-type: none">▪ Calibration▪ Accuracy<input type="checkbox"/> Repeatability<input type="checkbox"/> Data Acquisition from Sensors<input type="checkbox"/> Odometers<input type="checkbox"/> Heading Sensors<input type="checkbox"/> Accelerometer<input type="checkbox"/> Inertial Measurement Unit<input type="checkbox"/> Vision Sensing<input type="checkbox"/> Range Sensing<input type="checkbox"/> Sonar Sensing<input type="checkbox"/> Flow SensingTouch SensingSensing for SurveillancePeople SensingMulti-Sensor Fusion	45