

RIME 843: Sensors and Sensing

Textbook

1. 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">· <u>Sensor Characteristics</u><ul style="list-style-type: none">· Calibration· Accuracy· Repeatability· Data Acquisition from Sensors· Odometers· Heading Sensors· Accelerometer· Inertial Measurement Unit· Vision Sensing· Range Sensing· Sonar Sensing· Flow Sensing· Touch Sensing· Sensing for Surveillance· People Sensing· Multi-Sensor Fusion	45