

**The Robots Focus Area in the Computer Science Major**  
**Department of Computer Science**  
**Tufts University**

*Last updated by Matthias Scheutz on November 6, 2018*

## **Overview**

The crux of robotics in CS is to understand how different types of robots can be programmed to perform useful tasks in variety of settings, from rovers roaming around on Mars, to collaborative robots in manufacturing, to socially assistive robots in elder care settings. The purpose of this focus area is to provide you with breadth and depth in the broad area of CS robotics with a strong technical foundation in computer science. This focus area applies equally well for Arts and Sciences (A&S) and School of Engineering (SoE) students.

## **The Computer Science Core**

1. Introduction to Computer Science (COMP 11)
2. Data Structures (COMP 15)
3. Machine Structure & Assembly Language Programming (COMP 40)
4. Discrete Mathematics (COMP 61)
6. Programming Languages (COMP 105)
6. Algorithms (COMP 160)
7. Theory of Computation (COMP 170)

## **The CS Robotics Core**

1. Probabilistic Robotics (COMP 150-XX)
2. Artificial Intelligence (COMP 131)
3. Ethics in AI, Robotics, and HRI (COMP 150-XX)

## **CS Robotics Electives**

Pick at least three courses from the list below:

1. Human-Robot Interaction (COMP 150-XX)
2. Machine Learning (COMP 135)
3. Autonomous Intelligent Robots (COMP 50)
4. Developmental Robotics (COMP 150-XX)
5. Statistical Pattern Recognition (COMP 136)
6. Deep Neural Networks (COMP 150-XX)
7. Reinforcement Learning (COMP 150-XX)
8. Computational Models in Cognitive Science (COMP 150-XX)
9. Computer Vision (COMP 150-XX)
10. Bayesian Deep Learning (COMP 150-XX)

## **Capstone**

To be successful in CS robotics in the future (in academia and industry alike), you will need hands-on experience with different types of robots and with experimental evaluations of robotic systems. You can fulfill the capstone de facto requirement in our CS robotics focus area by either doing a year long senior capstone project via COMP 97 and COMP 98 or doing a thesis in CS robotics via COMP 197.