



# FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE

## **PROF. SHYAMANTA M. HAZARIKA**

Department of Mechanical Engineering  
IIT Guwahati

**PRE-REQUISITES** : Basic Course in Probability and Linear Algebra

**INTENDED AUDIENCE** : Final Year B.Tech/M.Tech and PhD students

### **COURSE OUTLINE :**

What does automatic scheduling or autonomous driving have in common with web search, speech recognition, and machine translation? These are complex real-world problems that span across various practices of engineering! Aim of artificial intelligence (AI) is to tackle these problems with rigorous mathematical tools. The objective of this course is to present an overview of the principles and practices of AI to address such complex real-world problems. The course is designed to develop a basic understanding of problem solving, knowledge representation, reasoning and learning methods of AI.

### **ABOUT INSTRUCTOR :**

Prof. Shyamanta M Hazarika is a Professor of Mechanical Engineering at IIT Guwahati and leads the Biomimetic Robotics and Artificial Intelligence Lab. His research interest is in Rehabilitation Robotics. This translates into interest in Artificial Intelligence, Biomimetic Robotics and Robotic Neurorehabilitation. Prior to joining IIT Guwahati, he was with the Department of Computer Science and Engineering, Tezpur University. He has been a Vertretungsprofessur of Cognitive Systems and Neuroinformatics, University of Bremen, Germany. Prof. Hazarika holds a B.E. in Mechanical Engineering from Assam Engineering College, Guwahati, India; M.Tech. in Robotics from Center for Robotics, IIT Kanpur, India. He completed his PhD in Artificial Intelligence (Knowledge Representation and Reasoning) from School of Computing, University of Leeds, England.

### **COURSE PLAN :**

**Week 1:** AI and Problem Solving by Search

**Week 2:** Problem Solving by search

**Week 3:** Problem Solving by search (contd)

**Week 4:** Knowledge Representation and Reasoning

**Week 5:** Knowledge Representation and Reasoning (Contd)

**Week 6:** Knowledge Representation and Reasoning (contd)

**Week 7:** Reasoning under uncertainty

**Week 8:** Planning

**Week 9:** Planning and Decision Making

**Week 10:** Machine Learning

**Week 11:** Machine Learning (contd)

**Week 12:** Machine Learning (contd)