

FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE

PROF. SHYAMANTA M. HAZARIKA

Department of Mechanical Engineering
IIT Guwahati

TYPE OF COURSE : Rerun | Elective | PG

COURSE DURATION : 12 weeks(26 Jul' 21 - 15 Oct' 21)

EXAM DATE : 23 Oct 2021

PRE-REQUISITES : Basic Course in Probability and Linear Algebra

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

COURSE OUTLINE :

There are complex real-world problems like speech recognition and machine translations 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 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 with the Department of Mechanical Engineering at Indian Institute of Technology Guwahati, Assam, India. Prof. Hazarika have an M.Tech in Robotics from IIT Kanpur. He has been awarded PhD from School of Computing, University of Leeds, England where he worked under the supervision of Prof. Anthony G Cohn. From October 2009 to March 2010, he has been a Vertretungsprofessur (Substitute `Full' Professor) of Cognitive Systems & NeuroInformatics, FB3 - Informatik, University of Bremen, Germany. His primary research interest is in Rehabilitation Robotics and Knowledge Representation and Reasoning. This translates into interest in bio-mimetic prosthetics; cognition and cognitive vision. From August 2010 to May 2017, he was a Professor in the Department of Computer Science & Engineering at Tezpur University, wherein he had es tablished the Biomimetic and Cognitive Robotics Lab. He have been part of European Science Foundation's COST Action IC0903 MOVE: Knowledge Discovery from Moving Objects. As member of Working Group 1, the emphasis was on development of appropriate `ontology' for identification of motion patterns from massive amounts of data generated by location-aware devices. More recently on a DST-UKIERI Project he had worked with Prof. John Q Gan, University of Essex, England on a Brain Controlled Wheelchair.

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, Decision Making

Week 10: Decision Making

Week 11: Machine Learning

Week 12: Machine Learning (contd)