Foundations of Artificial Intelligence

Dr K .Vijayakumari

Dr S.Usharani

Dr S.Banu Chitra

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Dr K Vijayakumari
Assistant Professor
Department of Computer Science
Trinity College for Women
Namakkal

Dr S Usharani
Head /Professor
Department of MCA
Viswam Engineering College
Madanapalle

Dr S Banu Chitra
Head /Assistant Professor
Department of BCA
N.P.R Arts and Science College
Natham, Dindigul

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Syllabus

Unit I

Introduction to AI –Agents and Environments –Concept of rationality Nature of environments –Structure of agents Problem solving agents search algorithms –uninformed search strategies.

Unit II

Heuristic search strategies –heuristic functions. Local search and optimization problems –local search in continuous space –search with non deterministic actions –search in partially observable environments –online search agents and unknown environments.

Unit III

Game theory –optimal decisions in games –alpha-beta search –Montecarlo tree search – stochastic games –partially observable games. Constraint satisfaction problems –constraint propagation –backtracking search for CSP –local search for CSP –structure of CSP.

Unit IV

Knowledge-based agents –propositional logic –propositional theorem proving – propositional model checking –agents based on propositional logic. First-order logic –syntax and semantics –knowledge representation and engineering –inferences in first-order logic –forward chaining - backward chaining –resolution.

Unit V

Ontological engineering –categories and objects – events –mental objects and modal logic – reasoning systems for categories – reasoning with default information. Classical planning – algorithms for classical planning - heuristics for planning – hierarchical planning nondeterministic domains - time, schedule, and resources –analysis.

Dr. K. Vijayakumari is working as an Assistant Professor in the Department of Computer Science at Trinity College for Women, Namakkal, Tamil Nadu. She has completed M.C.A., M.Phil., Ph.D., NET., She has five years of teaching experience. Her areas of specialization include Data Mining, Machine Learning, Internet of Things (IoT) and Artificial Intelligence. She has published twelve research papers, three book chapters and two books in national and international journals.

Dr. S. Usharani is working as a Head / Professor in the Department of MCA at Viswam Engineering College, Madanapalle, Andhra Pradesh. she has over 18 years of teaching experience. She specializes in Data Mining, Cloud Computing, Artificial Intelligence and has published numerous research papers in national and international journals. She has also completed various NPTEL courses and serves as a mentor and coordinator for multiple academic programs. A passionate educator and researcher, she continues to inspire students and contribute to the field of computer science.

Dr. S. Banu Chitra is an experienced academician and researcher in Computer Science. She is currently the Head of the Department of BCA at NPR Arts and Science College, Natham. she has over 19 years of teaching experience. Her expertise spans Artificial Intelligence, Machine Learning, Data Mining, Digital Image Processing, Cryptography and Convolutional Neural Networks. She has published numerous research papers in national and international journals and actively participates in conferences, workshops and faculty development programs. She has been recognized with multiple Excellence in Teaching and Best Faculty Awards. she has delivered lectures on ICT, AI and Digital Image Processing.