

Automated Planning

Academic Year: (2021 / 2022)

Review date: 14-05-2021

Department assigned to the subject:

Coordinating teacher: GARCIA OLAYA, ANGEL

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

None

OBJECTIVES

- To present state-of-the-art automated planning techniques
- To characterize every technique as well as the domains they suit better
- To use tools that implement techniques discussed in class
- To identify different open issues for research in order to suggest new Master and PhD thesis

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction
 - 1.1 Knowledge representation
 - 1.2 Heuristic Search
2. Classical planning
 - 2.1 State space. STRIPS
 - 2.2 Partial plans. UCPOP
3. Planning based on plan graphs
 - 3.1 Plan graphs. GRAPHPLAN
 - 3.2 SAT planning. SATPLAN
4. Heuristic planning
 - 4.1 Early approaches. HSP, FF
 - 4.2 New heuristics and planners. Fast downward, pattern data bases, landmarks, symbolic planning, portfolios
 - 4.3 Hierarchical Task Networks (HTN). SHOP2
5. Machine learning in planning
6. Other planning paradigms
 - 6.1 Temporal planning (scheduling)
 - 6.2 Partial Satisfaction Planning
 - 6.3 Planning under uncertainty

LEARNING ACTIVITIES AND METHODOLOGY

Lectures
 Weekly homework
 Final project with oral presentation
 Individual office hours

ASSESSMENT SYSTEM

50% oral presentation of final project (final exam)
 50% sum of homework
 Extraordinary evaluation: 100% project

% end-of-term-examination:	50
% of continuous assessment (assignments, laboratory, practicals...):	50

BASIC BIBLIOGRAPHY

- James F. Allen, James Hendler y Austin Tate (eds.) Readings in planning, Morgan Kaufmann, 1990..
- Malik Ghallab, Dana Nau, Paolo Traverso Automated Task Planning. Theory & Practice, Morgan

Kaufmann, 2004.

- Stuart Russell y Peter Norvig Artificial Intelligence: A modern approach, Prentice Hall, 2010

BASIC ELECTRONIC RESOURCES

- ICAPS council . ICAPS: <https://www.icaps-conference.org/>