

Daniel Borrajo

1. PLG core research themes and interests

The main research interest of PLG lies on the study of techniques that lie in between the fields of Problem solving (including Automated planning) and Machine learning. Within this theme, we are interested on advancing the state of the art in scientific issues related to, among others, efficient search mechanisms, learning of action models and heuristics, or integration of planning, execution and learning. At the same time, we try to apply the scientific advances to real world problems, as the ones we have been working in the last years related to projects funded by either competitive public calls or private contracts. Examples of such application domains are logistics, data mining, business workflow, educational tools, satellites or tourism. Recently, we have started applying the problem solving and learning techniques to robotics, either in our lab, or in other research groups labs (Kanna's lab in MBARI or Manuela Veloso lab at CMU).

2. Technological Maturity

Our technology has been deployed in several projects, as mentioned before. Our ideas are being tested in the marine domain in collaboration with Kanna's group by integrating planning, execution and learning in the same architecture. In our group we use a different set of techniques and tools for planning as the ones Kanna's group works on. We have developed three planners and a set of learning techniques that can be incorporated to those planners. We believe the field of marine research can greatly benefit from search, planning and learning technology allowing researchers in other fields to focus on the missions goals and letting our technology automatically generate, monitor, control, replan and learn from the interaction of robotic platforms with the environment. We envision a set of robotic agents that generate combined plans, monitor their execution and learn from the results.

3. Projects and funding

PLG has obtained and coordinated external grants and participated in networks of excellence in the past years from Europe (such as MathBridge, 2009-2011, SHAMASH, ESPRIT IV 25491, 1998-2000, PLANET and PLANET-II, European Research Network of Excellence on Planning, or COST282, Knowledge Exploration in Science and Technology, 2001-05), ESA (CCI, 2009-2010), international agreements (Italy- Spain collaboration agreement between the Ministry of Foreign Affairs together with ISTC-CNR), Ministry of Education (two research projects covering 2000-02 and 2005-2008, and two networks of excellence in planning and multiagent systems), the Ministry of Science and Research (two research projects - SAMAP - covering 2002-05 and PELEA, 2009-2011), the Ministry of Industry (three research projects, TIMI 2008-2010, Argos 2010-2012 and airlines replanning, 2010-2012), local government (2006, 2007 and 2008), and companies (Ericsson, 2008 and 2009, Simuladores Empresariales, 2007-2009, Union Fenosa, 1989 and 1995). Almost all these projects were related to the application of problem solving and machine learning technology to domains as workflow, education, science, or factories.

4. Most relevant citations

Our publications and research projects can be found on:

<http://www.plg.inf.uc3m.es/investigacion.php>.



BALEARIC ISLANDS COASTAL OBSERVINGS AND FORECASTING SYSTEM and MEDITERRANEAN INSITUTE FOR ADVANCED STUDIES, Universitat Illes Balears, CSIC

