

Downsizing Robotics: Autonomy vs. Intelligence¹

Vicente Matellán, Camino Fernández, Juan F. García Sierra, Francisco Rodríguez Lera
Grupo de Robótica. (<http://robotica.unileon.es>)
Departamento de Ingenierías Mecánica, Informática y Aeroespacial
Escuela de Ingenierías Industrial e Informática
Campus de Vegazana, 24071 Universidad de León (Spain)

E-mail: {*vicente.matellan,camino.fernandez,juan.sierra,fjrod*}@unileon.es

Abstract

Research on Mobile robotics is in our opinion more focused on generating autonomous behaviors than on the development of basic technologies (locomotion, localization, navigation, etc.). However, this issue is really a complex problem where many technologies converge: artificial perception, electronics, even philosophy and there are no general theories generally accepted in the research community. Historically, Cybernetics was the first subjacent theory, then artificial intelligence techniques were the dominant paradigm used to try the solve the problem, in the 90s the focus turned to biology based systems, nowadays ethology has emerged again as the most promising theories to generate autonomous behavior. In this paper we want to present the most relevant concepts borrowed from ethology that have been successfully used in mobile robotics, such as the use of ethograms in robotic pets or the ideas of schemes, or the use of fixed actions patterns to implement reactivity.

Keywords: robots, ethology, group coordination

1.- Introduction

Downsizing (Cameron, 1995) is a euphemisms often used to refer to the suspension or permanent termination of employment of a group of employees for business reasons. It is also a term that refers to re-thinking an organization or company. We are using the word in this last sense; we think that mobile robotics has “downsized” expectations.

Science fiction movies (where robots as C3P0 and R2D2 in Star Wars were almost human), and the optimism of the pioneers in computer science, who thought that most of the problems would be easily solved by digital computers (Newell, 1959), make people believe that “intelligent robots” will be available sooner than later. Unfortunately, the problem of creating artificial intelligences has proved more difficult than expected and now is even strange to find researchers that use the term “intelligent”. Instead, mobile robotics researchers are using the “generation of autonomous behavior”, as the goal to be fulfilled.

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