Automatic Guided Vehicle Simulation in MATLAB by Using Genetic Algorithm

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1. Introduction

The prodigious advances in robotics in recent times made the use of robots more present in modern society. One important advance that requires special attention is the development of an unmanned aerial vehicle (UAV), which allows an aircraft to fly without having a human crew on board, although the UAVs still need to be controlled by a pilot or a navigator.

Today's UAVs often combine remote control and computerized automation in a manner that built-in control and/or guidance systems perform deeds like speed control and flight-path stabilization. In this sense, existing UAVs are not truly autonomous, mostly because air-vehicle autonomy field is a recently emerging field, and this could be a bottleneck for future UAV development.

It could be said that the ultimate goal in the autonomy technology development is to replace human pilots by altering machines decisions in order to make decisions like humans do. For this purpose, several tools related with artificial intelligence could be employed such as expert systems, neural networks, machine learning and natural language processing (HAYKIN, 2009). Nowadays, the field of autonomy has mostly been following a bottom-up approach, such as hierarchical control systems (SHIM, 2000).

One interesting methodology from the hierarchical control systems approach is the subsumption architecture that decomposes complicated intelligent behavior into many "simple" behavior modules, which are organized into layers. Each layer implements a particular goal and higher layers are increasingly more abstract. The decisions are not taken by a superior layer, but by listening to the information that are triggered by sensory inputs (lowest layer). This methodology allows the use of **reinforcement learning** to acquire behavior with the information that comes with experience.

Inspired by old behaviorist psychology, **reinforcement learning** (RL) concerned with how an *agent* ought to take *actions* in an *environment*, so as to maximize some notion of cumulative *reward*. Reinforcement learning differs from standard supervised learning in that correct input/output pairs which are never presented (HAYKIN, 2009). Furthermore, there is a focus on an on-line performance, which involves finding a balance between exploration (of uncharted territory) and exploitation (of current knowledge). The reinforcement learning has been applied successfully to various problems, including robot control, elevator scheduling, telecommunications, backgammon and chess (SHIM, 2000).

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Whispering the Strategies of Language: An Psychological Journey through **Automatic Guided Vehicle Simulation In Matlab By Using**

In a digitally-driven world where screens reign great and immediate conversation drowns out the subtleties of language, the profound strategies and emotional nuances concealed within words usually move unheard. Yet, set within the pages of **Automatic Guided Vehicle Simulation In Matlab By Using** a fascinating literary prize pulsating with organic feelings, lies a fantastic journey waiting to be undertaken. Published by a skilled wordsmith, this wonderful opus attracts visitors on an introspective trip, softly unraveling the veiled truths and profound impact resonating within ab muscles material of every word. Within the emotional depths of the emotional review, we shall embark upon a sincere exploration of the book is primary styles, dissect its interesting writing style, and fail to the effective resonance it evokes heavy within the recesses of readers hearts.

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