
Preface

Advanced computational techniques for decision making on unmanned systems are starting to be factored into major policy directives such as the United States Department of Defence UAS Roadmap. Despite the expressed need for the elusive characteristic of “autonomy”, there are no existing systems that are autonomous by any rigorous definition. Through the use of sophisticated algorithms, residing in every software subsystem (state estimation, navigation, control and so on) it is conceivable that a degree of true autonomy might emerge. The science required to achieve robust behavioural modules for autonomous systems is sampled in this book. There are a host of technologies that could be implemented on current operational systems. Many of the behaviours described are present in fielded systems albeit in an extremely primitive form. For example, waypoint navigation as opposed to path planning, so the prospects of upgrading current implementations are good if hurdles such as airworthiness can be overcome. We can confidently predict that within a few years the types of behaviour described herein will be commonplace on both large and small unmanned systems.

This research book includes a collection of chapters on the state of art in the area of intelligent machines. We believe that this research will provide a sound basis to make autonomous systems human-like.

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Editors

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