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The Development of a Robot with Advanced Intelligent Control Using a Variety of Transportable Intelligent Platforms

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Abstract

The paper describes VIPRo, a versatile, intelligent portable robot platform that entails creating intelligent control interfaces using advanced control techniques adapted to the robot environment, such as Robot Neutrosophic Control (RNC), Robot Extenics Control (eHFPC), Robot Haptic Control (RHC), and human adaptive mechatronics, all of which are implemented using high-speed processing IT&C techniques and real-time communication for large amounts of processing data.

Through depiction of intelligent mobile robots in a 3D virtual environment utilising VIP-F2Ro with robotic strong simulator, an open architecture system, and adaptive networks over the robot's classical control system, an unique virtual projection approach is used to SMOOTH firefighting robots.

Keywords: *Robot simulation, VIPRO platform , Reference generation, Graphical user interface*

INTRODUCTION

Mobile robots have piqued the interest of the scientific community as well as the manufacturing business, resulting in significant hardware and software development. Human behaviour in flames and the modelling of individual mobility in such a dangerous setting are two applications that researchers are particularly interested.

Simultaneously, real-time robot control and remote network control with human operators' ability play an important role in hazardous and challenging environments where human life is exposed to great dangers, such as support and repair in nuclear contaminated areas, fire, earthquake, or any other disaster area in the event of an accident or terrorist attack involving CBRN materials.

RESULTS AND DISCUSSION

A large number of studies have resulted in the creation of several robots having sensing, transport, and manipulation capabilities for various purposes.

EXPERIMENTAL

The VIP-F2Ro Virtual Intelligent Portable platform, is the one designed to gather the data received from unmanned ground vehicles (UGV), to process and analyse them, to offer feedback. The VIP-F2Ro introduces the virtual robots to the real world, seeking to establish a new robot platform, which will allow to develop mechatronic systems of mobile robots in virtual settings and communicate with actual robot systems through a high speed interface.

CONCLUSION

Development of 3D dynamic perception and visualisation, and human-robot interaction software systems are formidably demanding and correspondingly the activities to assist software developments and project management procedures are of essential relevance to this piece of study. A number of criteria can be used to categorise attribute-based techniques. Environmental and wearable sensors, mobile robots, and radio communications all provide dynamic data. SMOOTH will consequently build software solutions for real-time data analytics to measure situational awareness, asses danger and improve decision-making by firemen and ICs. To support both risk and decisions, new computational software tools and virtual reality engines are being developed. In order to determine the effectiveness and validity, the VIP-F2Ro Platform develops appropriate metrics and testing tools.

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