Work 68 (2021) 821–823
DOI:10.3233/WOR-203415
IOS Press

Editorial

Special Issue on Workplace Violence Prevention using Security Robots

Robots are key components of versatile manufacturing due to various environments where they can be configured and reprogrammed for different tasks. Computer programming also involves technical skills in computer systems and in the production process. Robotic programming is a not intuitive job, However, in various traditional and unconventional manufacturing and other workplaces environment, robots are increasingly used. Recent advances in the interaction between human-robots, robot automation, co-working between people, and the interaction between robots-robot have, in addition, contributed to the introduction of more and more robotics in autonomous and intelligent production systems. Such publications are not produced by order or to reinvent science fiction. Actually, they emerged because of the pressures on the international market for cheaper and more diversified goods. This Special Issue is honored to introduce a collection of 14 papers that cover a broad range of exciting topics in social robotics. The papers are outlined below.

The article entitled "**Need for developing a security robot-based risk management for emerging practices in the workplace using the Advanced Human-Robot Collaboration Model**" concerns collaborative robotics for the rising role in the manufacture, warehouses, mining agriculture, and modern industrial environments. In this paper, the Advanced Human-Robot Collaboration Model (AHRMC) approach to present risk assessment in security robotshas been utilized to develop a highly protected security robot based risk management system in the workplace.

The article entitled "**Mathematical modeling on workplace violence hazard assessment and security analysis using Optimized Grey Dynamic System Theory**" suggests an Optimized Grey Dynamic System Theory (OGDST) for analyzing work-related incidents and hazard assessment. This research shows that psychological aggressive behavior often precedes the physical abuse of the workplace identified by employees. Efficacy tests demonstrate the efficiency of these suggested models.

"**Robotic Mounted Rail Arm System for implementing effective workplace safety for migrant workers**" demonstrates a study of the robotic kitting system with a Robotic Mounted Rail Arm System (RMRAS), which travels in a narrow fashion to choose the elements. The objective is to evaluate the efficiency of a robotic kitting system in cycle times through modeling of the elementary kitting operations.

"**Security robot for the prevention of workplace violence using the Non-linear Adaptive Heuristic Mathematical Model**" analyses the Non-linear Adaptive Heuristic Mathematical Model (NAHMM) for the prevention of workplace violence using security human-robot collaboration (HRC). The authors reported that HRC is an interdisciplinary field of research that encompasses cognitive sciences, classical robotics, and psychology. Furthermore, the robot can make the optimal decision between actions that expose its capabilities to the human being and take the best steps that are currently available to the human being. Further, the ideal policy can be measured carefully under certain observability assumptions for the state of the art security system.

The article entitled "**Design of a workstation based on the human-interfacing robot for occupational health and safety**" discusses the physical world program with the mechanic's simulations. This article outlines the perspectives oflearning from the incorporation and operation of robotics in digital cognitive models. The new feature of this design process

is the approach for testing alternative workstation designs, taking into account efficiency and safety features by means of computer simulations.

"**Security and privacy issues related to the workplace-based security robot system**" discusses RISAPI, which shows how probabilistic planning and system theory algorithms in workplace robotic systems that work with people using a security robot system. This framework utilizes various hypotheses to analyze the complex robot behavior through real-time interaction, which transforms actual human subjects into a spectrum of production systems, robots and care facilities.

"**FPLP3D: Security robot for face recognition in the workplace environment using face pose detection assisted controlled FACE++ tool position**: **A three-dimensional robot**" concerns the detection of Assisted Controlled FACE++ tool position of three-dimensional robot (FPLF3D) to improve the reliability of the robot's human-machine contact in workplace environment for security assistance. Furthermore, the applications that are imitated by headers like telepresence, computer-generated reality and video competitions will directly take advantage of the strategies introduced in this paper.

The article entitled "**Machine learning techniques based on security management in smart cities using robots**" examines a deep reinforcement learning concept to learn the features of smart cities with the help of security robots called cobalt robots. The smart cities related to new incoming features are examined by applying the modular neural network. The network successfully predicts the unwanted activity in smart cities by dividing the collected data into a smaller subset which reduces the complexity improves the overall security management process.

In "**Interaction modeling and classification scheme for augmenting the response accuracy of human-robot interaction systems**" the Interaction modeling and classification scheme (IMCS) is introduced to improve the accuracy of HRI. This scheme consists of two phases namely error classification and input mapping which helps to improve the interaction accuracy by reducing the ratio of errors and interaction response from the discrete and successive human inputs.

"**Meta-Heuristic Feature Optimization for ontology-based data security in the campus workplace with robotic assistance**" proposes a new Meta-Heuristic Feature Optimization (MHFO) method for the data security in campus workplace with robotic assistance. Furthermore, according to the designs of data protection ontology the weight of theoretical identification is allocated. Here, the dimensionality of functional areas can be reduced significantly by combining characteristic frequency weights based on data protection ontology.

The article entitled "**RERS-CC: Robotic facial recognition system for improving the accuracy of human face identification using HRI**" describes the Robotic Facial Recognition System using the compound classifier (RERS-CC) to improve the recognition rate of human faces. The process is differentiated into classification, detection and recognition phases that employ principal component analysis based learning. In this learning process, the errors in image processing based on the extracted heterogeneous features are used for error classification and accuracy improvements. The performance of the proposed RERS-CC is validated using an experimental analysis of the input image dataset in MATLAB tool.

"**ADA-SR: Activity detection and analysis using security robots for reliable workplace safety**" discusses the activity detection and analysis (ADA) using security robots in workplaces.The authors identified deviations on the basis of independent data correlation and information processing. The performance of the proposed method is verified for the three human activities such as standing, walking and running as detected using the images and sensor dataset.

The article entitled "**Unprofessional problems and potential healthcare risks in individuals' social media use**" discusses the research gap and possible risks reforming strategies on healthcare communication in social media through statistical analysis. As indicated by an ongoing report, there is a solid connection between the measure of time spent via web-based networking media and depression among youthful grown-ups which creates unprofessional problems and potential healthcare risk in individuals due to the usage of social media. The experimental validation on case studies shows prominent solutions which has not been addressed in the traditional methods.

In "**Industrial Internet of Things for smart manufacturing applications using Hierarchical Trustful Resource Assignment**", the author proposes a Hierarchical Trustful Resource Assignment (HTRA) and Trust Computing algorithm (TCA) based on Vickrey Clarke-Groves (VGCs) in the computer carriers necessary resources to communicate wirelessly among IIoT devices and gateways, and the allocation of CPU resources for process-

ing information at the CPC for smart manufacturing applications. Finally, experimental findings demonstrate that when the IIoT equipment and gateways are effective, the utilities of each participant are improved.

We would like to sincerely thank our Review Committee Members and the Preface Editorial Board for their untiring efforts in reviewing the manuscripts, and giving suggestions and valuable inputs for shaping this volume. We again appreciate the kindness of the Editor and Reviewers in helping to improve the manuscript. We would like to take this opportunity to thank them for the effort and expertise that they contributed to reviewing, without which it would be impossible to maintain the high standards of peer-reviewed journals.

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