

# **2022 3rd International Conference on Artificial Intelligence, Robotics and Control (AIRC 2022)**

**Virtual Conference  
20 – 22 May 2022**



**IEEE Catalog Number: CFP22BL3-POD**  
**ISBN: 978-1-6654-5948-8**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22BL3-POD
ISBN (Print-On-Demand):	978-1-6654-5948-8
ISBN (Online):	978-1-6654-5947-1

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# 2022 3rd International Conference on Artificial Intelligence, Robotics and Control (AIRC 2022)

## Table of Contents

Preface .....	v
Conference Committee .....	vi

---

---

### ❖ Software Design and Program Development

Data-Driven Models for Control Engineering Applications Using the Koopman Operator .....	1
<i>Annika Junker, Julia Timmermann, Ansgar Trächtler</i>	
Digital Money Transfer Application Optimized for Religious Contributions.....	10
<i>Ziran Fan</i>	
A Recommender System for Recommending Suitable Products in E-shop Using Explanations .....	16
<i>Bogdan Walek, Petr Fajmon</i>	
A Gender Recognition System Based on Facial Image.....	21
<i>Norah AlShaye, Lamia AlMoajil, M. Abdullah-Al-Wadud</i>	
The Development of an Application to Bridge the Cultural Gap between Japan and Vietnam for Vietnamese Living in Japan.....	26
<i>Hong Bich Cu, Takayuki Fujimoto</i>	
The Design and Realization of the Check-in System Based on Face Recognition.....	31
<i>Yanchao Liu</i>	

### ❖ Robots and Control Systems

The Free Path Planner Based on Windmill Decomposition.....	35
<i>Gene Eu Jan, Chaomin Luo, Ming Che Lee, Hui-Ching Hsieh</i>	
Real-Time Implementation of an Enhanced PID Controller Based on Marine Predator Algorithm (MPA) for Micro-robotics System.....	40
<i>Ehab Seif Ghith, Farid Abdel Aziz Tolba</i>	

Design of a Fuzzy Controller for the Calculation of Atmospheric Comfort in a Greenhouse .....	46
<i>Elvis Orlando Tomas Silvestre, Jhon Stalin Figueroa Bados, Jason Moises Alanya Villanueva, Carlos Alberto Coaquira Rojo, Nabil Jill Moggiano Aburto</i>	
H <sub>2</sub> Based Acceleration-Strain Feedback Control of Structures Subjected to Seismic Input .....	52
<i>S. Adarsh, Jagajyoti Panda, Samit Ray-Chaudhuri</i>	
The Innovation of Library Service by Artificial Intelligence Robot.....	57
<i>Jingjing Li</i>	
A Resilient RO-SLAM Algorithm with Bearing Reconstruction of Detected Landmarks.....	61
<i>Francesco Martinelli, Fabrizio Romanelli</i>	
Composed Physics- and Data-driven System Identification for Non-autonomous Systems in Control Engineering .....	67
<i>Ricarda-Samantha Götte, Julia Timmermann</i>	
Design of an Automatic System for the Control and Monitoring of Symptoms of Covid-19 through IoT Technology .....	77
<i>Joseph Junior Rojas Vila, Jhon Stalin Figueroa Bados, Jason Moises Alanya Villanueva, Danitza Victoria Yalli Villa, Carlos Alberto Coaquira Rojo</i>	

## ❖ **Artificial Intelligence and Information Technology**

The Fast <i>k</i> -NN Algorithm Based on a Fixed Grid Method .....	82
<i>Gene Eu Jan, Kuan-Lin Su, Hui-Ching Hsieh, Chaomin Luo</i>	
Meta-heuristic Search Algorithms for Solving the Economic Load Dispatch Problem .....	87
<i>Alaa Sheta, Alaa Ali, Abdelkarim Baareh, Sultan Aljahdali</i>	
Evaluating Machine Learning Algorithms to Detect Employees' Attrition .....	93
<i>Noor Khalifa, Maryam Alnasheet, Hasan Kadhem</i>	
A General Model that Gives Artificial Intelligence Needs Based on the Perspective of Value Philosophy ...	98
<i>Liping Zhou, Lin Wang, Xu Liu</i>	
Autonomous Outdoor Building Navigation Using a Single Monocular Camera .....	107
<i>John S. Seng, Laura H. McGann</i>	
Application and Research of Artificial Intelligence Embedded Service .....	114
<i>Jingjing Li, Qingda Li</i>	

## **Author Index**