

# Intelligent Manufacturing & Mechatronics

Proceedings of Symposium, 29 January 2018, Pekan, Pahang, Malaysia

Editors: **Hassan**, Mohd Hasnun Arif (Ed.)

Mohd Hasnun Arif Hassan  
Editor

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 Springer

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# Preface

The Symposium on Intelligent Manufacturing and Mechatronics (SymposIMM) 2018 was held at Universiti Malaysia Pahang in Pekan, Pahang, Malaysia, on 29 January 2018. It was organized by the Faculty of Manufacturing Engineering, Universiti Malaysia Pahang (UMP), in collaboration with the Faculty of Manufacturing Engineering of Universiti Teknikal Malaysia Melaka (UTeM), Melaka. Both parties aimed to provide a platform for deliberating empirical and theoretical research that are foreseen in the context of Industry 4.0. With the theme of “Strengthening Innovations Towards Industry 4.0”, it is the first dedicated symposium to Industry 4.0 hosted by the organizers. The symposium was graced by a vivacious keynote speech entitled “The Ideas of Mechatronics” by Prof. Ir. Dr. Wan Azhar Wan Yusoff.

This symposium enticed 120 submissions from authors nationwide. All submissions underwent a strenuous peer review process from members of the Peer-Reviewing Technical Committee. The reviews were based on the manuscript’s relevance to the tracks, novelty of the findings, the importance and presentation of the studies towards the particularity of Industry 4.0’s current trends. Following the review process, only 65 submissions made it into the symposium, 15 submissions were withdrawn, and 40 submissions were rejected due to various reasons. The accepted submissions were divided into five tracks covering various scopes of manufacturing engineering and mechatronics stream, namely Intelligent Manufacturing, Robotics, Artificial Intelligence, Instrumentation, and Modelling and Simulation. This book was divided into five parts based on the aforementioned tracks.

We would like to express our gratitude to all members of the Organizing Committee, without which the organization of this symposium would never be possible. Special thank goes to the management of the Faculty of Manufacturing Engineering, Universiti Malaysia Pahang, for the support towards the successful organization of the symposium. Further, we would like to extend our thanks to all authors for their participation in the symposium and their valuable contribution to this book. Last but not least, we would like to appreciate the help from the

publisher, especially to Dr. Christoph Baumann and Mr. Arumugam Deivasigamani. We hope that the contents of this book will benefit the readers in embracing the new era of industrial revolution 4.0.

Pekan, Pahang, Malaysia  
January 2018

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# Numerical Analysis of Fuzzy Logic Temperature and Humidity Control System in Pharmaceutical Warehouse Using MATLAB Fuzzy Toolbox

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Conference paper

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## Abstract

This paper describes the simulation for performance evaluation of fuzzy logic controller in pharmaceutical warehouse's temperature and humidity control system by using MATLAB Fuzzy Logic Toolbox and MATLAB Simulink. MATLAB fuzzy toolbox is used where a fuzzy logic controller is designed to simulate the control system based on control input such as user desired temperature, user desired humidity and deviation from desired parameters. The output control will be the cool fan speed, operation speed of ventilation fan (humidifier) and exhaust fan (dehumidifier). The result will be described in terms of the speed of output actuators changing with the difference in input temperature and humidity. The results of the Simulink model with optimized efficient and good performance are presented. The main aim is to achieve the output actuators with good performance, stable and smooth as the desired set point temperature and humidity and also develop fuzzy inference control system to simulate and monitor the desired temperature and ventilation system in pharmaceutical warehouse area.

## Keywords

Fuzzy logic controller

MATLAB simulink

MATLAB toolbox