

**KNOWLEDGE EXTRACTION AND VALIDATION METHODS FOR PROCESS  
OPTIMIZATION AND FAULT DETECTION IN AN AUGMENTED REALITY  
APPLICATION**

By:

Christian Alison Maulion Piolo

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SWISS GERMAN UNIVERSITY  
The Prominence Tower  
Jalan Jalur Sutera Barat No. 15, Alam Sutera  
Tangerang, Banten 15143 - Indonesia

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### STATEMENT BY AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

Christian Alison M. Piolo

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Student

---

Date

Approved By:

Dr. Eng. Aditya T. Pratama

---

Thesis Advisor

---

Date

Prof. Dr.-Ing. Andreas Schwung

Thesis Co-Advisor

Date

Dr. Maulahikmah Galinium, S.Kom, M.Sc

---

Dean of Faculty of Engineering & IT

---

Date

---

Christian Alison M. Piolo

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**ABSTRACT**

**Knowledge Extraction and Validation Methods for Process Optimization  
and Fault detection in an Augmented Reality Application**

By

Christian Alison M. Piolo

Dr. Eng. Aditya T. Pratama, Advisor

Prof. Dr.-Ing. Andreas Schwung, Co-Advisor

SWISS GERMAN UNIVERSITY

With the growing complexity of processes in factories, expert knowledge is considered a very valuable asset to have. However, expert knowledge is difficult to obtain and teach. This process requires time, practice and experience which the experts have obtained throughout their years of work. Fortunately, with the rapid technological advancements, there are many options that can help assist with this problem. One of the prominent technologies companies have tried implementing into their processes are augmented reality. Since this is still a new tool, there are many questions about its plausibility and effectiveness when used as a tool for learning and process optimization. In this thesis, it will aim to use augmented reality to assist in knowledge internalization, process optimization and fault detection and then formulating a solution developed in an augmented reality application. This paper discusses the proper ways to extract knowledge through the use of questionnaires, eFMEA and pFMEA and then implementing them into the HoloLens and testing the effectiveness of the implementation through time studies and tests.

*Keywords: Knowledge Management, Augmented Reality, Expert Knowledge, FMEA*

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## **DEDICATION**

I dedicate this thesis to my parents, teachers and myself.

To make the people who have guided me proud  
and also, for me to see my full potential.

We did it bub!

## **ACKNOWLEDGEMENTS**

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