

**A VOICE-BASED e-EXAMINATION EXPERT SYSTEM FOR THE VISUALLY  
IMPAIRED IN OPEN AND DISTANCE LEARNING**

**BY**

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**A DISSERTATION SUBMITTED IN THE DEPARTMENT OF COMPUTER AND  
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**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD  
OF MASTER OF SCIENCE DEGREE IN COMPUTER SCIENCE.**

**MARCH, 2017  
CERTIFICATION**

This is to certify that this research work entitled **A Voice-Based e-Examination Expert System for Open and Distance Learning** was carried out by Inam, Itorobong Akpan with matriculation number 14PCG00660 under our supervision and approved by us:

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## **DEDICATION**

I dedicate this project to God Almighty for His sufficient grace, wisdom and knowledge given to me throughout my Master's Degree Programme.

## DECLARATION

I hereby declare that this research project entitled **A Voice-Based e-Examination Expert System for Open and Distance Learning** was carried out by Inam, Itorobong Akpan with matriculation number 14PCG00660. The project is centered on an original study in the department of Computer and Information Sciences, College of Science and Technology, Covenant University, Ota, under the supervision of Dr. Ambrose Agbon Azeta and Dr. Olawande Daramola. Concepts of this research project are results of the research carried out by Inam, Itorobong Akpan and ideas of other researchers have been fully recognized.

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## **ABSTRACT**

Open and Distance learning (ODL) is a means of acquiring knowledge without necessarily being in normal direct communication with the instructor. The aim of ODL is to increase access to education and by extension online examination for those who have difficulty accessing education such as the poor, illiterate, less privileged, and those with location and financial constraints. Most electronic examination (e-examination) systems are web-based, and studies on the accessibility level of distance education show that web-based form of examination does not fully meet the needs of visually impaired persons. Voice-based systems allow users access to information on the internet over a phone interface. Prior studies on ODL e-examination systems that make use of voice user interface do not sufficiently exhibit intelligent form of assessment, which diminishes the rigour of examination. The objective of this project is to improve on the achievements of previous studies by providing a voice-based e-examination expert system for ODL that demonstrates shuffling of examination questions to learners. The study employs a combination of technologies such as system design and modeling using Unified Modeling Language (UML), server side scripting, voice-based system development, data management and rule-based reasoning in order to develop a prototype voice-based e-examination expert system for ODL. The developed system was evaluated to determine the level of performance and usability. The result of the usability evaluation showed that the developed application has an 'average usability' rating of 3.48 out of 5 scales. The performance evaluation of the system using Paradigm for Dialogue System Evaluation (PARADISE) gave a score of 4.78 on a scale of 5 as the maximum. This shows that the voice-based e-examination system will not only complement the existing web-based