**ADAPTATION OF CONVOLUTIONAL NEURAL NETWORKS FOR DEEPFAKE DETECTION**

**SUBMITTED TO**

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**CERTIFICATION**

This is to certify that this project report titled **ADAPTATION OF CONVOLUTIONAL NEURAL NETWORKS FOR DEEPFAKE DETECTION** is an authentic and original work completed by the JIMOH RASHEED OLAMILEKANin partial fulfillment of the requirements for NATIONAL DIPLOMA (ND) IN THE DEPARTMENT OF COMPUTER SCIENCE. The project report has been prepared under the guidance of MR. OYEKUNLEat GATEWAY (ICT) POLYTECHNIC SAAPADE, OGUN STATE.

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**DEDICATION**

I humbly dedicate this project report to **GOD Almighty** for seeing ME through my project, and to brother for his support and encouragement.

I dedicate this project report to all the individuals who have supported and inspired me throughout this journey. Without their guidance, encouragement, and unwavering belief in our abilities, this project would not have been possible.

I would like to express our deepest gratitude to my supervisor, His expertise, patience, and valuable insights have been instrumental in shaping this project.. His constant support and guidance have motivated me to push my boundaries and strive for excellence.

I would also like to acknowledge the support of my parents, whose love, understanding, and encouragement have been my pillars of strength. Their sacrifices and belief in my potential have motivated me to reach higher and work harder. I am grateful for their constant encouragement and for always being there for me, no matter the circumstances.

In conclusion, I dedicate this project report to all those who have been a part of my journey, directly or indirectly. Your support, encouragement, and belief in us have been invaluable. This project stands as a testament to our collective efforts and serves as a reminder of what can be achieved when we come together with a shared vision. Thank you all for being an integral part of my growth and for inspiring me to pursue excellence.

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**ABSTRACT**

Deep learning is an effective and useful technique that has been widely applied in a variety of fields, including computer vision, machine vision, and natural language processing. Deepfakes uses deep learning technology to manipulate images and videos of a person that humans cannot differentiate them from the real one. In recent years, many studies have been conducted to understand how deepfakes work and many approaches based on deep learning have been introduced to detect deepfakes videos or images. In this paper, I conduct a comprehensive review of deepfakes creation and detection technologies using deep learning approaches. In addition, give a thorough analysis of various technologies and their application in deepfakes detection. Our study will be beneficial for researchers in this field as it will cover the recent state-of-art methods that discover deepfakes videos or images in social contents. In addition, it will help comparison with the existing works because of the detailed description of the latest methods and dataset used in this domain

**KEYWORDS**

**Convolutional Neural Networks (CNNs): -** A type of deep learning model particularly effective in processing visual data, widely used for image recognition tasks.

**DeepFake Detection:** The process of identifying digitally altered videos or images that use AI to create realistic but fake content.

**Face Forensics:** The study and application of techniques to analyze and verify the authenticity of facial images and videos.

**Image Processing:** Techniques used to enhance, manipulate, and analyze images for various applications, including detection of anomalies.

**Machine Learning (ML)** - A branch of AI focused on building systems that learn from data to make decisions or predictions.

**Artificial Intelligence (AI) -** The broader field of creating intelligent systems capable of performing tasks that typically require human intelligence**.**

**Digital Media Security:** Measures and techniques used to protect digital media from unauthorized access, alteration, or dissemination.

**Adversarial Training:** A method of training neural networks using adversarial examples to improve robustness against deceptive inputs.

**Real-time Detection:** Techniques and systems designed to detect anomalies or specific patterns instantly as data is processed.

**Forgery Detection:** Methods and tools used to identify and prevent the use of falsified digital content.

**Feature Extraction:** The process of transforming raw data into informative representations for machine learning models.

**Model Adaptation:** Adjusting and fine-tuning machine learning models to improve performance on specific tasks or datasets.

**Neural Network Architecture (NNA):** The design and structure of neural networks, including layers, neurons, and connections.

**Deep Learning (DL):** A subset of machine learning involving neural networks with many layers, capable of learning from large amounts of data.

**Fake Media Identification:** Techniques and processes used to identify and verify the authenticity of media content.

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