**COVER LETTER**

**Names and affiliation of authors**

Kenneth Mary Ogbuka \* **(Corresponding Author)**

Department of Computer Science, Federal University of Technology, Minna, Nigeria

kenneth.pg918157@st.futminna.edu.ng

Stephen Michael Olujuwon

Department of Cyber Security Science, Federal University of Technology, Minna, Nigeria

mjuwon7@gmail.com

# Novelty and Importance of the findings

In this study a two-level password authentication system was developed. This authentication is based on visual cryptography at the first-level and graphical password at the second level. Text-based password suffers from shoulder surfing and key-logging attacks. Graphical password suffers also from shoulder surfing attack when used alone. This proposed two-level Authentication method addresses shoulder surfing and key-logging vulnerability experienced by both Text-based and graphical-based passwords.

# Declaration

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed.

# Conflict of Interest Statement

On behalf of all authors, the corresponding author states that there is no conflict of interest.

# Informed Consent

Informed consent was obtained from all individual participants included in the study.

# Ethical Approval

Not applicable

# Trial Registration

Not applicable

# Contributorship

* Conception or design of the work – Kenneth Mary Ogbuka
* Data collection - Kenneth Mary Ogbuka, and Stephen Michael Olujuwon
* Data analysis and interpretation - Stephen Michael Olujuwon
* Drafting the article - Kenneth Mary Ogbuka
* Critical revision of the article - Stephen Michael Olujuwon
* Final approval of the version to be published – All Authors