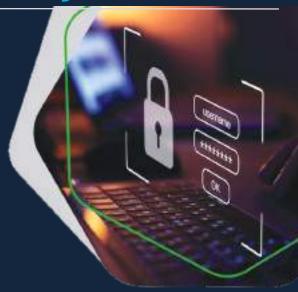# 3D GRAPHICAL AUTHENTICATION

## Enhancing Usability and Security in Modern Access Control Systems

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Dr. Rika Sharma

Dr. Brijesh Khandelwal

Dr. Satyajit S. Uparkar

# 3D Graphical Authentication: Enhancing Usability and Security in Modern Access Control Systems

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Dr. Priti C. Golar is an Assistant Professor at St. Vincent Pallotti College of Engineering & Technology, Nagpur, where she has been specializing in Information Technology for the past 18 years. She earned her Ph.D. in Computer Science and Engineering from Amity University, Raipur, Chhattisgarh. Dr. Golar has made significant academic contributions, publishing over 20 research papers in esteemed international and national journals, including those indexed in SCI, Scopus, and UGC. She has also authored book chapters and holds copyrights for her scholarly work.

Her expertise spans Data Analytics, Big Data, Security, and Image Processing, with a research approach that integrates technological innovation and societal impact. Dr. Golar's dedication to addressing complex challenges through research and teaching highlights her profound influence in the academic and technological domains.

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Dr. Rika Sharma is currently serving as the Associate Professor and Head of the Department of Computer Science and Engineering at Amity University, Chhattisgarh. With over 22 years of teaching experience across engineering colleges and universities, she brings a wealth of knowledge and leadership to her role. Dr. Sharma holds an M.Tech. in Computer Science and Engineering and a Ph.D. from the National Institute of Technology, Raipur, India.

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Prof. (Dr.) Brijesh Khandelwal, a distinguished academician and administrator, is currently serving as a Professor of Computer Science and Engineering at Amity School of Engineering and Technology, Amity University Uttar Pradesh, Lucknow Campus. He also holds the position of Deputy Director of Quality Assurance and Enhancement (QAE).

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# INDEX

# Summary

This book explores the evolution and enhancement of Graphical User Authentication (GUA) systems, underscoring their significance in modern information security. Starting with a foundational understanding of authentication's role in protecting digital assets, it provides a detailed overview of graphical password systems and their potential as secure, user-friendly alternatives to traditional text-based passwords. Key limitations in existing GUA methods are addressed, including security vulnerabilities and usability challenges, prompting the introduction of an Extended GUA system designed to improve both security and user experience. The book further advances this discussion with a focus on 3D GUA designs, which add layers of complexity to bolster protection against unauthorized access. Comparative analysis with existing systems and strategies for mitigating security threats reveal a thorough examination of the system's robustness. Concluding with forward-looking perspectives, the book provides insights into the future trajectory of graphical authentication, making it a valuable resource for those engaged in developing secure and accessible authentication technologies.