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An Enhanced Database Security System using Dynamic Time-Warping Voice Recognition Technique

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Abstract: *In the rapidly evolving digital landscape, ensuring the security of personal and corporate data stored in Database Management Systems (DBMS) is a top priority. Current data protection methods, primarily reliant on passwords and UserID/PIN protection, are vulnerable to hacking and unauthorized access. This project addresses these shortcomings by introducing an advanced secured database system that utilizes dynamic time-warping voice recognition technology to enhance security. Existing data protection methods have significant limitations, necessitating a more robust and intuitive authentication system. The proposed system employs voice recognition with dynamic time-warping algorithms, which can discern unique voice patterns to offer a sophisticated and secure authentication method. By analyzing distinct vocal attributes, the system adds an extra layer of security, reinforcing data protection against potential threats. The project uses an Object-Oriented Analysis and Design Methodology (OOADM) with a Prototyping development approach, allowing for continuous refinement based on evolving requirements. The front end, designed using ASP.NET C#, provides an accessible and user-friendly interface for administrators. The back end utilizes SQL Management Studio 2014, ensuring efficient and secure data storage and retrieval. Integrating voice recognition technology enhances security, reduces reliance on traditional passwords, and improves user experience. System evaluation findings demonstrate a significant improvement in data protection with the implementation of voice recognition technology. Performance metrics, including accuracy, precision, and sensitivity, indicate that dynamic time-warping algorithms effectively authenticate users based on their unique vocal attributes, mitigating risks associated with conventional methods. In conclusion, the proposed system shows promising results in reinforcing database security and enhancing user authentication. It is recommended to implement this advanced secured database system in real-world scenarios, providing organizations with a reliable and innovative solution to bolster data protection in today's dynamic digital landscape*

Keywords: Dynamic Time-Warping (DTW), Voice Recognition, Database Security and Authentication Systems