

# "Your Eyes Tell You Have Used This Password Before": Identifying Password Reuse from Gaze and Keystroke Dynamics

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## Abstract

A significant drawback of text passwords for end-user authentication is password reuse. We propose a novel approach to detect password reuse by leveraging gaze as well as typing behavior and study its accuracy. We collected gaze and typing behavior from 49 users while creating accounts for 1) a webmail client and 2) a news website. While most participants came up with a new password, 32% reported having reused an old password when setting up their accounts. We then compared different ML models to detect password reuse from the collected data. Our models achieve an accuracy of up to 87.7% in detecting password reuse from gaze, 75.8% accuracy from typing, and 88.75% when considering both types of behavior. We demonstrate that using gaze, password reuse can already be detected during the registration process, before users entered their password. Our work paves the road for developing novel interventions to prevent password reuse.

## Original Reference

Yasmeen Abdrabou, Johannes Schütte, Ahmed Shams, Ken Pfeuffer, Daniel Buschek, Mohamed Khamis, and Florian Alt. 2022. "Your Eyes Tell You Have Used This Password Before": Identifying Password Reuse from Gaze and Keystroke Dynamics. In *CHI Conference on Human Factors in Computing Systems (CHI '22)*. Association for Computing Machinery, New York, NY, USA, Article 400, 1–16.

**Paper link:** <https://doi.org/10.1145/3491102.3517531>