

FP-STALKER: Tracking Browser Fingerprint Evolutions

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FP-STALKER: Tracking Browser Fingerprint Evolutions

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Abstract : Browser fingerprinting has emerged as a technique to track users without their consent. Unlike cookies, fingerprinting is a stateless technique that does not store any information on devices, but instead exploits unique combinations of attributes handed over freely by browsers. The uniqueness of fingerprints allows them to be used for identification. However, browser fingerprints change over time and the effectiveness of tracking users over longer durations has not been properly addressed. In this paper, we show that browser fingerprints tend

to change frequently—from every few hours to days—due to, for example, software updates or configuration changes. Yet, despite these frequent changes, we show that browser fingerprints can still be linked, thus enabling long-term tracking. FP-STALKER is an approach to link browser fingerprint evolutions. It compares fingerprints to determine if they originate from the same browser. We created two variants of FP-STALKER, a rule-based variant that is faster, and a hybrid variant that exploits machine learning to boost accuracy. To evaluate FP-STALKER, we conduct an empirical study using 98,598 fingerprints we collected from 1,905 distinct browser instances. We compare our algorithm with the state of the art and show that, on average, we can track browsers for 54.48 days, and 26 % of browsers can be tracked for more than 100 days.

Keywords : [browser fingerprinting](#) [random forests](#) [user tracking](#)

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