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Novel solution for real time mobile click fraud detection

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Significant increase of mobile Internet browsing in recent years has led to an increase in the popularity of advertising in mobile devices. With smart phones having wireless connectivity and GPS location capability, mobile advertising ad platform can make personalized and localized advertising, which is the main difference when compared with traditional TV advertising. Mobile ad is a key pillar to the mobile app ecosystem. Unfortunately, this huge-revenue ecosystem is severely thwarted by ad fraud due to large sum of money available in this market. The main categories of ad fraud are bot-driven frauds and placement frauds.

Though click frauds have been relatively well-studied in desktop environments, there are few research studies on mobile click frauds. Existing approaches mainly focus on offline testing to detect click frauds. In this paper we proposed Real Time Mobile Ad Investigator (RTMAI) to investigate incoming traffic to a particular web site through mobile devices. In RTMAI we provided three layers to collect (Front-end data collection layer), process (Back-end data processing layer) and to analyze (Decision making layer) incoming traffic to the target web site.

Whether a click is fraudulent or not is decided at the decision making layer. RTMAI uses two systems called Horizontal Analysis Sub System (HASS) and Vertical Analysis Sub System (VASS) to make decisions.

In the HASS we analyzed individual events. For an example there should not be any touch events if the device is a desktop. In VASS, RTMAI analyses events over a period of time to see if there are abnormalities. For example, mobile device height should be the same for the entire user session.

RTMAI assigns weights for each attribute value pair in the HASS and VASS. A fraudulent score for a click is then calculated as a function of these scores in real time.

Current results showed that RTMAI is capable of identifying majority of automated user events either from mobile devices or desktop devices and almost all of emulator based user events with higher accuracy. The system provided a better solution for identifying bot generated events over that of real user events.