

UNIVERSITY OF SOUTH FLORIDA

Defense of a Doctoral Dissertation

*On the Feasibility of Profiling, Forecasting and Authenticating Internet Usage
Based on Privacy Preserving NetFlow Logs*

by

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For the Ph.D. degree in Computer Science & Engineering

Understanding Internet user behavior and Internet usage patterns is fundamental in developing future access networks and services that meet technical as well as Internet user needs. User behavior is routinely studied and measured, but with different methods depending on the research discipline of the investigator, and these disciplines rarely cross. We tackle this challenge by developing frameworks that the Internet usage statistics used as the main features in understanding Internet user behaviors, with the purpose of finding a complete picture of the user behavior and working towards a unified analysis methodology. In this dissertation we collected Internet usage statistics via privacy-preserving NetFlow logs of 66 student subjects. We have used Statistical Analysis and we found that Internet usage of each user exhibits statistically-strong correlation with the same user's Internet usage for the same day over multiple weeks while it is statistically different from that of other Internet users. In another attempt we have used Time Series Forecasting in order to forecast future Internet usage. Subsequently, using state-of-the-art Machine Learning algorithms, we demonstrate the feasibility of profiling Internet users by looking at their Internet traffic.

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