

1154-37-1845

Victoria Rayskin* (victoria.rayskin@tufts.edu). *Nonchaotic Models and Predictability of the Users' Traffic Dynamics on Internet Platforms.*

Internet platforms' traffic defines important characteristics of platforms, such as price of services, advertisements, speed of operations. The traffic is usually estimated with the help of the traditional time series models (ARIMA, Holt-Winters, etc.), which are successful in short term extrapolations of sufficiently denoised signals.

We propose a dynamical system approach for the modeling of the underlying process. The method allows to discuss the global qualitative properties of the dynamics' phase portrait and long term tendencies. We prove that the proposed models are not chaotic, the long term prediction is reliable, and it explains the fundamental properties and trend of various types of digital platforms. Because of these properties, we call the flow of these models the *trending flow*. Utilizing the new approach, we construct the two-sided platform models for the volume of users, that can be applied to Amazon.com, Homes.mil or Wikipedia.org.

We consider a generalization of the two-sided platforms' models to multi-sided platforms. If the equations' are cooperative, the flow is trending, and it helps to understand the properties of the platforms and reliably predicts the long term behavior. (Received September 16, 2019)