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Self-learning classifier for internet traffic

Original

Self-learning classifier for internet traffic / Ram, Keralapura; Mellia, Marco; Grimaudo, Luigi. - (2014).

*Availability:* This version is available at: 11583/2540288 since:

Publisher:

Published DOI:

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#### US 8,694,630 B1 SELF-LEARNING CLASSIFIER FOR INTERNET TRAFFIC

## Ram Keralapura, San Jose, CA (US); Marco Mellia, Turin (IT); and Luigi Grimaudo, Turin (IT) Assigned to Narus, Inc., Sunnyvale, CA (US) Filed by Ram Keralapura, San Jose, CA (US); Marco Mellia, Turin (IT); and Luigi Grimaudo, Turin (IT) Filed on Nov. 18, 2011, as Appl. No. 13/300,342.

### Int. Cl. G06F 15/173 (2006.01)

#### U.S. Cl. 709-224 [709/223]

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1. A method for classifying network traffic in a network, comprising:

obtaining a first flow batch comprising a first plurality of flows from the network traffic;

processing, by a processor of a computer system, a first working set portion of the first flow batch for a first iteration based on a first pre-determined algorithm, comprising:

dividing the first working set portion into a plurality of clusters; and

filtering, based on a server port found in the cluster, a cluster of the plurality of clusters to generate a filtered cluster and a second working set portion of the first flow batch;

processing the second working set portion for a second iteration based on the first pre-determined algorithm; and classifying the first flow batch based at least on the filtered cluster,

wherein filtering the cluster based on the server port comprises:

identifying a first server port as most frequently occurring comparing to all other server ports in the cluster;

- in response to determining that a first frequency of occurrence of the first server port in the cluster exceeds a predetermined threshold:
- removing, from the cluster, a flow having a different server port than the first server port to generate the filtered cluster, wherein the filtered cluster is identified as a dominatedPort cluster based on a pre-determined criterion; and

removing the dominatedPort cluster from the first working set portion to generate a remainder as a second working set portion.

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