



Prefix-Based Prediction-Oriented Cooperative Caching in Named Data Networking

Prof. Min Chen

School of Computer Science and Technology

Huazhong University of Science and Technology

Time: 1:30pm on June 25, 2013

Location: Dong Shang Yuan 406, UM-SJTU Joint Institute

Abstract

Evolution from content-centric networking (CCN) protocol, named data networking (NDN) is content name-oriented and pushes data to edge gateways/routers. In NDN, data is cached at routers for a certain time. When deadline reaches, the data will be removed to yield space due to the limited size of content storage. If the data is popular, the previously queried data can be reused for multiple times to save bandwidth capacity. Thus, it's critical to design an efficient replacement policy to prevent content storage from overflowing. Though Least Recently Used (LRU) and Least Frequency Used (LFU) have been proposed in standard CCN protocol, they are not suitable for NDN since they ignore the advantage of NDN. In this talk, a novel caching policy, named by Prefix-based Prediction-oriented Cooperative Caching (PPCC), will be introduced, which is specifically designed for NDN by considering the unique features of NDN. We implement our PPCC caching policy and perform simulations using OPNET Modeler. In order to evaluate the performance of PPCC in 4G/5G network, long term evolution (LTE) model is used. The simulation results show that the hitting rate value of PPCC is higher than LRU significantly, and PPCC reduces the traffic of backhaul while facilitating the offloading of server traffic.

Biography

Min Chen is a professor in School of Computer Science and Technology at Huazhong University of Science and Technology (HUST). He was an assistant professor in School of Computer Science and Engineering at Seoul National University (SNU) from Sep. 2009 to Feb. 2012. He was R&D director at Confederal Network Inc. from 2008 to 2009. He worked as a Post-Doctoral Fellow in Department of Electrical and Computer Engineering at

Wireless and Networking Lab (Wang Lab)

University of Michigan-Shanghai Jiao Tong University Joint Institute

<http://wanglab.sjtu.edu.cn>



University of British Columbia (UBC) for three years. Before joining UBC, he was a Post-Doctoral Fellow at SNU for one and half years. He received Best Paper Award from IEEE ICC 2012, and Best Paper Runner-up Award from QShine 2008. He has more than 180 paper publications. He serves as editor or associate editor for Information Sciences, and other 6 SCI/SCIE journals. He is managing editor for IJAACS and IJART. He is a Guest Editor for IEEE Network, IEEE Wireless Communications Magazine, etc. He is Co-Chair of IEEE ICC 2012-Communications Theory Symposium, and Co-Chair of IEEE ICC 2013-Wireless Networks Symposium. He is General Co-Chair for the 12th IEEE International Conference on Computer and Information Technology (IEEE CIT-2012). He is Keynote Speaker for CyberC 2012 and Mobiquitous 2012. He is a TPC member for IEEE INFOCOM 2014. His research focuses on Internet of Things, Machine to Machine Communications, Body Area Networks, Body Sensor Networks, E-healthcare, Mobile Cloud Computing, Cloud-Assisted Mobile Computing, Ubiquitous Network and Services, Mobile Agent, and Multimedia Transmission over Wireless Network, etc. He is an IEEE Senior Member since 2009.

Wireless and Networking Lab (Wang Lab)

University of Michigan-Shanghai Jiao Tong University Joint Institute

<http://wanglab.sjtu.edu.cn>