Sourav Kumar Dandapat

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Education

PhD in CSE, IIT Kharagpur July, 2009 - January, 2015 (Thesis submitted on second January 2015)
M.Tech in CSE, IIT Kharagpur, India 2003 - 2005
B.E. in CSE, Jadavpur University, India, 1998-2002

Research Interests

Wireless Network, **Mobile Social Computing**, **Distributed System**

Experience

IIT Kharagpur, Academic Research Project (March, 2009 - June, 2014), as Senior Scientific Officer, funded by Vodafone.
IIT Kharagpur, Academic Research Project (July, 2014 - till date), as Research Associate, funded by CSIR.
Member of Complex Network Research Group (CNeRG) headed by Prof. Niloy Ganguly, Department of CSE, IIT Kharagpur.

Industrial Experience of about 4 Years

Magma Design Automation India Pvt. Ltd. (December, 2007 - February, 2009), Associate Member of Technical Staff: Worked in quartz_drc and quartz_dfm tools which are designed to verify whether a particular layout meets corresponding system specification and fabrication requirement.
IBM ISL (July, 2005 - November, 2007),System Software Engineer : Worked in testing and development of AIX. Goal of this team was to design and develop testcases for newly added features in AIX.

Teaching Assistantship:

During my PhD, I served as Teaching Assistant in the following courses.
Distributed System (three semesters), Complex Network (two semesters), Programming and Data Structure Lab (three semesters), Ubiquitous Computing (one semester)
Duties involved designing course curriculum, setting question papers and evaluating students.

Publications

Sourav Kumar Dandapat, Swadhin Pradhan, Bivas Mitra, Niloy Ganguly, and Romit Roy Choudhury "ActivPass: Your Daily Activity is Your Password" (Accepted in **ACM SIGCHI**, 2015).
Swadhin Pradhan, **Sourav Kumar Dandapat**, Niloy Ganguly, Bivas Mitra, and Pradipta De, "Aggregating Inter-App Traffic to Optimize Cellular Radio Energy Consumption on Smartphones" **Comsnet** 2015, Bangalore, India,
Sourav Kumar Dandapat, Swadhin Pradhan, Niloy Ganguly, and Romit Roy Choudhury, "Sprinkler : Distributed content storage for just-in-time streaming", **ACM Cellnet** workshop co-located with **MobiSys**, June 2013, Taipei, Taiwan

Sourav Kumar Dandapat, Bivas Mitra, Romit Roychowdhury, Niloy Ganguly, "Smart Association Control In Wireless Mobile Environment Using Max-Flow", **IEEE Transaction on Network and Service Management**, 2012
Sourav Kumar Dandapat, Sanyam Jain, Romit Roychowdhury, Niloy Ganguly, "Distributed content storage for just-in-time streaming, Poster paper, **ACM SIGCOMM**, 2012
Sourav Kumar Dandapat, Bivas Mitra, Romit Roychowdhury, Niloy Ganguly, "Fair Bandwidth Allocation in Wireless Mobile Environment Using Max-Flow", **HiPC** 2010, Goa, India, Dec 2010
Sourav Kumar Dandapat, Ravi Niranjan, Niloy Ganguly, "Framework for Collaborative Download in Wireless Mobile Environment", PhD Forum, **IEEE Mobile Data Management**, Bangalore, India, 2012
Sourav Kumar Dandapat, Bivas Mitra, Romit Roychowdhury, Niloy Ganguly, "Fair Bandwidth Allocation in Wireless Network Using Max-Flow", Poster paper, **ACM SIGCOMM** 2010, New Delhi, India, September 2010

Brief Description of PhD Topic

As a result of the popularity of mobile devices, mobile data traffic is increasing in exponential rate. According to the Ciscos prediction this trend will continue and by end of 2018 mobile data usage will be around 16 Exabyte per month compared to the 1.5 Exabyte in 2013. To manage this enourmous mobile data traffic one single step is not adequate. We have identified three issues related to mobile data traffic management as our objective of this thesis - 1) Efficient offload using Wi-Fi Network 2) Managing Heterogeneous Traffic 3) Restricting Unauthorized Traffic.

Efficient offload using Wi-Fi Network: Cellular networks are becoming heavily congested and to offload this traffic, Wi-Fi network becomes a promising solution. However, it is still difficult for a Wi-Fi network to support a user with high mobility, especially for applications with high-bandwidth requirement like video streaming. In this work, we propose to host popular files in local memory that can be attached with Wi-Fi AP. This solution, reduces access delay and increases throughput significantly. Main challenge of this project is to design spatial distribution scheme to distribute file chunks across APs to utilize limited memory attached with AP in efficient way.

Managing Heterogeneous Traffic: From different study of human mobility model, it is known that traffic across network (spatially) is not evenly distributed. Simple association strategies result in overloading some access points while most of the access points remain under utilized. To overcome this issue, we create a global view of load distribution through out of band communication among APs and also reduce association control problem to classical *Max-Flow* problem. Our proposed association control protocol can handle the uneven load distribution and accommodate maximum clients.

Restricting Unauthorized Traffic: There are many paid services which grant access to valuable content like movies, news, songs etc. People used to share their subscription credential of such services either under social pressure or to reduce per head subscription charge. As an effect this increases unauthorized traffic. To restrict sharing of credential, we propose a new dynamic authentication scheme based on user's daily activity. For evaluation purpose, we develop a system which considers browsing history, Facebook activities, and phone activities. Our system collects users' activities, select potential activities for challenge generation, get response from users and verify responses to authenticate.

M.Tech. Project	**CAD for Testing Path Delay Fault**
B.E. Project	**Automatic Traffic Signaling System**
Tools and Languages	*NS3, ONE, LP_SOLVE* C, C++, Python, Shell Scripting, JAVA, Android Programming
Honours and Awards	Ranked 71 in Engineering in West Bengal State Joint Entrance Examination Percentile in GATE (Graduate Aptitude Test in Engineering) - 99.4 Got selected for studying B.Stat in Indian Statistical Institute, Kolkata Travel grants: MobiSys once, SIGCOMM for 2 times

References

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