Laila Daniel

Tilustie 1 H, 01230, Vantaa, Finland

phone:+358415375421. email: lailapdaniel@gmail.com

Objective: Seeking a Research position in the area of Computer networking.

Education

2010 Doctor of Philosophy in Computer Science from University of Helsinki awarded in December 2010. Thesis title 'Cross-layer Assisted TCP Algorithms for Vertical Handoff'. Grade: Eximia cum laude approbatur. Grade in related subject studies (93 ECTS credits): 5 (excellent). Supervisor: Markku Kojo, Principal researcher and Lecturer, Department of Computer Science, University of Helsinki.

2008 Licentiate of Philosophy in Computer Science from University of Helsinki awarded in November 2008. Thesis title 'TCP Performance with Vertical Handoff'. Grade: Eximia cum laude approbatur.

1990 Masters in Technology (M. Tech) in Electronics with First class from Cochin University of Science and Technology, Kerala, India. Main subjects studied: Computer networks, Digital Signal processing and Digital Electronics. Masters thesis was on "Design and development of Intel 8088 microcontroller-based Communication Controller for X.25 protocol"

1983 Bachelor of Science (B. Sc) in Electronics and Communication with distinction from University of Kerala, India.

2015-2016 I have completed courses in Cloud computing, SDN, Big Data and Hadoop Platform and studying a course on Machine learning from the online course portal (Coursera).

2010 Completed the course, University Pedagogy I (10 ECTS credits) and Supervision and Guidance in Higher Education (5 ECTS credits) conducted by University of Helsinki with Excellent grades in June 2010.

Previous work experience

2011-2015 Post-doctoral researcher in the Department of Computer Science, University of Helsinki, from 01.01.2011 to 31.12.2015. I was working as a researcher in the Internet of Things project (www.internetofthings.fi). My research is on the design and development of transport protocols for IoT. Our studies focus on alternative congestion control mechanisms for CoAP and also on optimizing HTTP/SPDY for IoT environment. We have two research publications in this area. This work received the second best paper award in the recent IEEE World Forum-IoT conference in December 2015.

I am also studying how to achieve low latency in the Internet. As a first step, a survey on low latency mechanisms is in the manuscript state.

I conducted a course on Unix Network programming project and the exercise classes on Network programming and Internet Protocols.

2001-2011 Doctoral student, Researcher in various research projects and teacher at the Department of Computer Science, University of Helsinki.

My PhD thesis focussed on the the problem of vertical handoff that enables a mobile device to use different access technologies to connect to the Internet. As their characteristics differ widely, it is crucial to adapt the transport protocol, TCP, to these changes to enable good performance of the applications. Our solutions employed cross-layer notifications that provide minimal information about the access networks that can be used by TCP to adapt to the changes involved in a handoff. The results show that the proposed solutions are amenable to implementation in real world scenarios as the modifications needed are fairly simple to implement in existing systems and often result in significant improvement in the applications' performance.

My area of research was mainly on Congestion control in wireless and mobile networks. We used ns-2 simulator environment, Linux emulated environment and also real GPRS/HSPA mobile networks. I have 20 research publications in this field. We used ns-2 simulator environment, Linux emulated environment and also real GPRS/HSPA mobile networks.

Taught courses on Mathematical Modelling of Computer Networks, Unix network programming, Internet protocols and conducted Seminars on Internet of Things, Software Defined Networking.

2000-2001 Swedish Institute Scholarship. Guest researcher in the Department of Computer and Information Science, Linköping University, Sweden.

1990-2000 Senior Lecturer in the Department of Computer Science and Engineering, National Institute of Technology, Calicut, India. I taught both undergraduate and postgraduate level courses in Computer Science and Engineering.

1984-1990 Researcher in Electronic Research and Development Centre (now known as CDIT), India, a national research lab. I was involved in the design and implementation (both hardware and software) of communication controller cards for telephone exchanges.

Programming skills

Good familiarity with tools and techniques for modelling, simulation and verification of computer network protocols using tools such as ns2 simulator, netem emulator, SDL protocol modeller and SPIN model checker.

Programming/Scripting languages known: Unix and C, C++, Java, Python, R, Fortran, Pascal, shell scripting, Matlab and SAGE.

Main Publications

I have 20 research publications mostly in ACM/IEEE conferences.

1. L.Daniel, I. Järvinen , A. Y. Ding, H. Flinck and M. Kojo. Low Latency Mechanisms for the Internet Transport Protocols, Manuscript stage.

2. I. Järvinen, L. Daniel, and M. Kojo. Experimental Evaluation of Alternative Congestion Control Algorithms for Constrained Application Protocol (CoAP), Proceedings of the IEEE 2nd World Forum on Internet of Things (WF-IoT), December 2015, Runner-up Best paper award.

3. L. Daniel and M. Kojo and M. Latvala. Experimental Evaluation of the CoAP, HTTP and SPDY Transport Services for Internet of Things. 7th International Conference on Internet and Distributed Computing Systems (IDCS) 2014, Proceedings of Springer 2014 Lecture Notes in Computer Science, pages 111-123.

4. I. Järvinen, B. Chemmagate, A.Y. Ding, L. Daniel and M. Kojo Effect of Competing TCP Traffic on Interactive Real-Time Communication. Passive and Active Measurement, 14th International Conference, PAM 2013.
   I was involved in the analysis of the experimental data to bring out the results.

5. I. Järvinen, B. Chemmagate, L. Daniel, A.Y. Ding, M. Kojo, M. Isomäki. Impact of TCP on Interactive Real-Time Communication: Position Paper. Internet Architecture Board (IAB) / Internet Research Task Force (IRTF) Workshop on Congestion Control for Interactive Real-Time Communication, 2012.
   I was involved in the analysis of the experimental data to bring out the results.

6. L. Daniel and M. Kojo. Enhancing TCP with Cross-layer Notifications and Capacity Estimation in Heterogeneous Access Networks. In Proceedings of the 37th IEEE Conference on Local Computer Networks (LCN' 12), October 2012.

7. L. Daniel. Cross-layer Assisted TCP Algorithms for Vertical Handoff. PhD Thesis, Department of Computer Science, University of Helsinki, pages 170, November 2010.

8. L. Daniel and M. Kojo. The Performance of Multiple TCP Flows with Vertical Handoff. In Proceedings of the 7th ACM International Symposium on Mobility Management and Wireless Access (MobiWac' 09), October 2009.

9. L. Daniel and M. Kojo. Employing Cross-layer Assisted TCP Algorithms to Improve TCP Performance with Vertical Handoffs, International Journal of Communication Networks and Distributed Systems (IJCNDS), Volume 1, Issue 4/5/6, pages 433-465, November 2008.

10. L. Daniel. TCP Performance with Vertical Handoff. Licentiate Thesis, Department of Computer Science, University of Helsinki, pages 116, November 2008.

11. L. Daniel, I. Järvinen, and M. Kojo. Combating Packet Reordering in Vertical Handoff Using Cross-Layer Notifications to TCP. In Proceedings of the IEEE International Conference on Wireless and Mobile Computing (WiMob08), pages 297-303, October 2008.

12. L. Daniel and M. Kojo. TCP Behaviour with Changes in Access Link Bandwidth and Delay During Vertical Handoffs. In Proceedings of the International Conference on Next Generation Mobile Applications, Services and Technologies (NGMAST' 07), Broadband Wireless Access Workshop, September 2007.

13. L. Daniel and M. Kojo. Using Cross-layer Information to Improve TCP performance with Vertical Handoffs. In Proceedings of the 2nd International Conference on Access Networks (Accessnets' 07), Broadband Wireless Internet Workshop, August 2007.

14. P. Sarolahti, J. Korhonen, L. Daniel, and M. Kojo. Using Quick-Start to Improve TCP Performance with Vertical Hand-offs. In Proc. 31st IEEE Conference on Local Computer Networks (LCN'06), pages 897-904, November 2006.

15. L. Daniel, M. Kojo. Adapting TCP Vertical Handoffs in Wireless Networks. In Proc. 31st IEEE Conference on Local Computer Networks (LCN'06), pages 897-904, November 2006.

16. L. Daniel, M. Luukkainen, M. Kojo. Experiences in Using SDL to Support the Design and Implementation of a Logical Link Layer Protocol. SDL Forum' 05, pages 187-197, 2005.
I was involved in the design of the logical link protocol and its modelling and testing in SDL.

17. M. Kojo, L. Daniel, D. Astuti, A. Nyrhinen, A. and K. Raatikainen. Improving TCP Performance over Wireless WANs Using TCP/IP-Friendly Link Layer, ICETE 04, pages 420-429, 2004.
I was involved in the design of the protocol for logical link layer.

References

Markku Kojo,
Principal Investigator,
Department of Computer Science,
University of Helsinki, Finland.

Sasu Tarkoma,
Professor,
Department of Computer Science,
University of Helsinki, Finland.