Eymen Kurdoglu

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Education

Ph.D., Electrical and Computer Engineering — New York University, NY
Advisors: Prof. Yao Wang, Prof. Yong Liu — **Jan. 2012 - May 2017**

M.Sc., Computer and Communication Sciences — EPFL, Switzerland
Advisors: Prof. Pascal Frossard, Dr. Nikolaos Thomos — **2008 - 2010**

B.Sc., Electrical and Electronics Engineering — METU, Turkey
Double major in the Department of Physics — **2003 - 2008**

Skills

- Deep understanding and extensive knowledge on practical and theoretical video encoding/decoding, signal processing, algorithms, optimization, networked systems, Internet architecture and network stack protocols, and machine learning.
- C/C++, MATLAB, Bash; event-driven programming, Linux, Wireshark

Projects

- Designed a bandwidth prediction and rate adaptation system for video calls, based on **time-series forecasting**. Compared to Apple FaceTime, **%23 increase in bandwidth utilization**, **reduction in 95-percentile frame delays by 2 sec**.
- Implemented an **entire end-to-end video call app** on Linux in C++, made **modifications to libx264** to implement hierarchical-P encoding.
- Investigated how to vary frame rate, picture resolution and quantization in order to **maximize perceptual video call quality** in the presence of packet losses.
- Compared layered video distribution with partitioned simulcasting for P2P video conferencing and showed **simulcasting achieves higher perceptual quality** in practical scenarios, contrary to popular belief.
- Proposed **buffer depth control and view prediction** for 360-video streaming.
- Examined the use of network coding in P2P live streaming.

Work Experience

Summer Intern, Optical Networking Group — NEC Labs America, Inc.
- Supervisor: Dr. Dayou Qian — **June 2013 - September 2013**
- Worked on the convergence of the optical transport and IP networks, where the goal was to compare optical multicasting with the traditional GMPLS protocol against the **software-defined networking (SDN)**.

Research Assistant Intern, LTS4 Signal Processing Lab — EPFL, Switzerland
- Supervisor: Prof. Pascal Frossard — **August 2010 - June 2011**

PUBLICATIONS

- *"Perceptual Quality Maximization for Video Calls with Packet Losses by Optimizing FEC, Frame Rate and Quantization"*, (submitted to IEEE TMM) E. Kurdoglu, Y. Liu, Y. Wang
- *"Prioritized Buffer Control in Two-Tier 360 Video Streaming"*, F. Duanmu, E. Kurdoglu, A. Hosseini, Y. Liu and Y. Wang, VR/AR Network Workshop at SIGCOMM, 2017
- *"View Direction & Bandwidth Adaptive 360 Degree Video Streaming Using Two-Tier System"*, F. Duanmu, E. Kurdoglu, Y. Liu, Y. Wang, ISCAS, 2017
- *"Real-time Bandwidth Prediction and Rate Estimation for Video Calls over Cellular Networks"*, E. Kurdoglu, Y. Liu, Y. Wang, Y. Shi, C. Gu, J. Lyu, ACM MMSys, 2016
- *"Dealing with User Heterogeneity in P2P Multi-party Video Conferencing: Layered Distribution Versus Partitioned Simulcast"*, E. Kurdoglu, Y. Liu, Y. Wang, IEEE TMM, vol. 18, no. 1, 2016
- *"Adaptive Prioritized Random Linear Coding and Scheduling for Layered Data Delivery from Multiple Servers"*, N. Thomos, E. Kurdoglu, P. Frossard, M. van der Schaar, IEEE TMM, vol. 17, no. 6, 2015
- *"Dealing with User Heterogeneity in P2P Multiparty Video Conferencing: Layered Coding Versus Receiver Partitioning"*, E. Kurdoglu, Y. Liu, Y. Wang, Communic. and Networking Techniques for Contemporary Video Workshop at INFOCOM, 2014
- *"Scalable Video Dissemination with Prioritized Network Coding"*, E. Kurdoglu, N. Thomos, P. Frossard, Streaming and Media Communication Workshop at ICME, 2011
- *"Network Coding Node Selection Game in Collaborative Streaming Systems"*, N. Thomos, H. Park, E. Kurdoglu, P. Frossard, ICASSP, 2010

TEACHING

- Head Teaching Assistant (TA) for *Internet Architecture and Protocols* at NYU
- TA for *Data Structures and Algorithms* at NYU
- TA for *Communication Networks: Design and Algorithms* at NYU
- Student Assistant for *Information Theory and Coding* at EPFL

AWARDS

Full Excellence Scholarship (EPFL), **Silver Project Award** (Senior Design Course, METU), **Dean's High Honor Roll** (6 times, METU)