CS 598KN - Fall 2020 – Advanced Multimedia Systems

Reading List

1. Week - August 25 – August 27 (Media and Coding)
   
   August 25: Introduction to Course and Video Media (presented by Klara Nahrstedt)
   August 27: Video 360, Volumetric Video, 3D Video (presented by Klara Nahrstedt)

2. Week – September 1 – September 3 (Media and Coding)
   
   September 1: Basics of Video Compression (presented by Klara Nahrstedt)
   September 3: H.264, MPEG-HEVC/H.265 Coding and Beyond HEVC (presented by Klara Nahrstedt)
   (Good Overview: Gong, Mao, “An overview of Emerging Video Coding Standards”, ACM SIGMOBILE Mobile Computing and Communications Reviews (GetMobile), December 2018, Vol.22, Issue 4)

3. Week – September 8 – September 10 (Multimedia Networks)
   
   September 8: Digital Audio and Coding (presented by Klara Nahrstedt)
   September 10: Introduction to QoS and Multimedia Streaming (presented by Klara Nahrstedt)
4. **Week – September 15 – September 17 (DASH Multimedia Streaming)**

**September 15: DASH Multimedia Streaming (presented by students)**

**September 17: DASH Multimedia Streaming (presented by students)**

5. **Week – September 22 – September 24 (Caching and Multimedia Distribution)**

**September 22: Caching (presented by students)**

**September 24: Introduction to Multimedia Distribution Networks (presented by Klara Nahrstedt)**

6. **Week – September 29 – October 1 (Mobile and Wireless Multimedia and Video Analytics)**

**September 29: Mobile/Wireless Video Streaming (presented by students)**
- Tsilimantos et al, “Classifying flows and buffer state for YouTube’s HTTP adaptive streaming service in mobile networks”, ACM MMSys 2018, Amsterdam, Netherlands, June 2018
October 1: Video Analytics *(presented by Hongpeng Guo)*

7. Week - October 6 – October 8 (Video Analytics and UAV Multimedia)

October 6: In-Network Video Analytics *(presented by students)*

- Hsieh et al, “Focus: Querying Large Video Datasets with Low Latency and Low Cost”, USENIX OSDI 2018

October 8: Multimedia Distribution via Drones *(presented by students)*


8. Week – October 13 – October 15 (Multimedia Distribution Networks)

October 13: Live Broadcasting


October 15: Video Distribution – Edge Computing *(presented by students)*

9. **Week – October 20 – October 22 (TAKE-HOME EXAM)**

**October 20: Multi-Camera Networks** *(presented by Guest Speaker: Qian Zhou)*

**October 22: NO CLASS** (Take-Home Exam, posted October 20 (Tuesday, 5pm), due October 26 (Monday, 11:59pm))

10. **Week - October 27 – October 29 (Mobile VR, Cloud Gaming, 360 Video Streaming)**

**October 27: Mobile VR and Mobile Cloud Gaming** *(presented by Students)*

- Shi et al., “Mobile VR on Edge Cloud: A Latency-Drive Design”, ACM MMSys 2019, Amherst, MA, June 2019

**October 29: Immersive Video, Video 360 Streaming** *(presented by Students)*


11. **Week – November 3 – November 5 (Video 360)**

**November 3: Video 360, Volumetric Video** *(presented by students)*

- Nasrabadi et al. “Viewport prediction for 360 Video: Clustering approach”, ACM NOSSDAV 2020
- Gul et al.,”Low latency cloud-based volumetric video streaming using head motion prediction”, ACM NOSSDAV 2020

**November 5: Video 360** *(presented by students)*

- Guan et al., “Pano: Optimizing 360 Video Streaming with better understanding of quality perception”, ACM SIGCOMM 2019, Beijing, China, August 2019
12. Week – November 10 – November 12 (Synchronization, AR/VR/Audio)

November 10: Introduction to Synchronization *(presented by Klara Nahrstedt)*

November 12: Audio and Video/VR 360 *(presented by students)*

13. Week – November 17 – November 19 (Quality of Experience)

November 19: Introduction to QoE *(presented by Klara Nahrstedt)*

November 21: QoE in Video 360 *(presented by students)*

14. Week – November 24 – November 26 (THANKSGIVING BREAK)

15. Week – December 1 – December 3 (Final Project Presentations)

December 1: Final Project Presentations *(presented by students)*

December 3: Final Project Presentations *(presented by students)*

16. Week – December 8–December 10 (Final Project Presentations)
December 8: Final Project Presentations (*presented by students*)

17. Week – December 15 – December 17 (Final Exams)

December 16: Final Project Report Due December 16 (Wednesday), 11:59pm