

Shannon Chen

(a.k.a. Chien-nan Chen)

Contact Information

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Education

University of Illinois at Urbana-Champaign, Illinois, USA (Aug 2012 ~)

PhD student, Department of Computer Science

National Taiwan University, Taipei, Taiwan (Sep 2009 ~ Jun 2012)

Master of Science, Graduate Institute of Networking and Multimedia

GPA: 4.0/4.0 (Class rank: 3/43, on 4.3 scale used in NTU)

National Taiwan University, Taipei, Taiwan (Sep 2005 ~ Jun 2008)

Bachelor of Science, Department of Computer Science and Information Engineering

GPA: 3.9/4.0 (Class rank: 4/100)

Publications

- **Shannon Chen**, Pengye Xia, and Klara Nahrstedt, "Activity-Aware Adaptive Compression: A Morphing-based Frame Synthesis Application in 3DTI", Proc. ACM Multimedia (MM), Barcelona, Spain, Oct. 2013. [**Grand Challenge Finalist**]
- Aadhar Jain, Ahsan Arefin, Raoul Rivas, **Shannon Chen**, and Klara Nahrstedt, "3D Teleimmersive Activity Classification Based on Application-System Metadata", Proc. ACM Multimedia (MM), Barcelona, Spain, Oct. 2013. [acceptance rate 30% (short paper)]
- Yu-Chuan Yen, Cing-Yu Chu, **Chien-Nan Chen**, Su-Ling Yeh, Hao-Hua Chu, and Polly Huang, "Exponential Quantization: User-Centric Rate Control for Skype Calls", Proc. ACM SIGCOMM, Hong Kong, China, Aug. 2013. [poster]
- **Shannon Chen** and Klara Nahrstedt, "Activity-based Synthesized Frame Generation in 3DTI Video", Proc. IEEE International Conference of Multimedia and Expo (ICME), San Jose, USA, Jul. 2013. [acceptance rate 12.7% (oral track)][**Best Paper Candidate**]
- **Chien-nan Chen**, Cing-yu Chu, Su-ling Yeh, Hao-hua Chu, and Polly Huang, "Modeling the QoE of Rate Changes in SKYPE/SILK VoIP Calls", Proc. ACM Multimedia (MM), Nara, Japan, Oct. 2012. [acceptance rate **20%**]
- **Chien-nan Chen**, Cing-yu Chu, Su-ling Yeh, Hao-hua Chu, and Polly Huang, "Measuring the Perceptual Quality of SKYPE Sources", ACM SIGCOMM Computer Communication Review (CCR), Sep. 2012. [acceptance rate **15%**]
- **Chien-nan Chen**, Cing-yu Chu, Su-ling Yeh, Hao-hua Chu, and Polly Huang, "Measuring the Perceptual Quality of SKYPE Sources", Proc. ACM SIGCOMM Workshop on Measurements Up the Stack (W-MUST), Helsinki, Finland, Aug. 2012.

Research Experience

User-centric Resource Adaptation in 3D Tele-immersion

Joint work with Prof. Klara Nahrstedt

Depending on the type of activity users are conducting in the 3DTI (3D Tele-immersion) environment, users' requirement on the quality of service (QoS) can be very different. Thus, we utilize mobile phones of users' as body sensors to help us detect the type of activity happening in a 3DTI environment. Base on the detected activity type, resolution of I/O devices and scheduling of computing resource can be dynamically fine-tuned and hence accomplish resource saving without degrading the quality of experience (QoE).

The Role of Psychophysics to VoIP Rate Adaptation

Joint work with Cing-yu Chu, Prof. Polly Huang, Prof. Hao-hua Chu and Prof. Su-ling Yeh

With a higher QoS (Quality of Service), researchers often jumped to the conclusion of a more satisfying state. However, inspired by perceptual psychology, we proved that naïve increases of bandwidth consumption do not imply perceptual improvements. This project targets to construct models that map between physical transmitting rate changes and psychological human satisfaction in order to design a human-centric rate adaptation scheme that optimize user's happiness under limited, fluctuating network environments as mobile networks.

Fairer is Better: A Perceptual-based Network Resource Allocation

Joint work with Cing-yu Chu, Prof. Polly Huang, Prof. Hao-hua Chu and Prof. Su-ling Yeh

Focusing only on fulfilling the satisfaction of user, will human-centric designs lead to greedy and selfish applications? Targeting on preserving the harmony between satisfaction and resource consumption, this project tries to prove that humane factors in application design actually maximize both number of concurrent users and aggregated satisfaction at the same time. Combining design agendas indicated by our resource-perception model, we designed a bandwidth allocation scheme which benefits users, content provider, and developer without a central resource allocator.

Selected Projects

Maple-Juice is a semester-long project about implementing a distributed file system with failure detection/recovery, leader election, workload balancing, and most importantly: map-reduce computing (hence the name.) This was a project of Distributed System course of UIUC.

Lunch Savior is an online agent which recommends lunch choices to users accordingly to their preferences. It learns new foods and knowledge about different foods by interactions with users. Due to the massive data and complex learning/matching algorithms, we used Hadoop and HDFS to parallelize the computation. This was the term project of Parallel Programming course of NTU.

Taroko Probe Car is a self-navigating robot car that equipped with infra-red sensors and ZigBee radio chip. It does RSSI finger-printing positioning with pre-set beacons in order to start and stop at any assigned locations. This was the term project of Wireless Sensor Network and Laboratories course.

Yuhoo? is a platform that allows mobile devices range from basic GSM phones to modern smart phones to retrieve information from Yahoo! with different levels of I/O elaboration accordingly to their supporting features, ex. GSM or 3G or Wi-Fi, w/ or w/o camera, w/ or w/o GSP. It was the **winner of Connected Life Special Prize at Yahoo! Open Hack Day 2008**.

La(g)tent is a hacking project of implementing a timing covert channel. We hacked the network interface controller to *lag* packet transmissions to create a *latent* code (hence the name.) Techniques of network cartography, information theory, and channel coding were studied. This was a spontaneous and self-instructed project.

Honors and Awards

First Place, Advanced Multimedia Systems Project	<i>UIUC (Dec 2012)</i>
Studying Abroad Scholarship	<i>Ministry of Education, Taiwan (Aug 2012)</i>
ACM SIGCOMM Student Travel Grant	<i>ACM (Aug 2012)</i>
Membership of the Phi Tau Phi Scholastic Honor Society	<i>Phi Tau Phi (May 2012)</i>
Garmin Scholarship	<i>Garmin Inc. (Jan 2012)</i>
Connected Life Special Prize, Yahoo! Open Hack Day	<i>Yahoo! Inc. (Sep 2008)</i>
Honorable Mention, ACM ICPC regional	<i>ACM (Nov 2008)</i>
CyberLink Elite Scholarship	<i>CyberLink Inc. (Dec 2007)</i>
Presidential Awards	<i>National Taiwan University (Fall/Spring 2005, Spring 2006, Fall/Spring 2008)</i>

Professional and Teaching Experiences

Server Administrator, *Network and System Lab, Department of Electrical Engineering, National Taiwan University (Jan 2011 ~ Jan 2012)*

Administer servers of NSLAB including one web+mail server, two planetLab servers, one NAS controller, and one gateway server with three machines under.

Programmer and System Manage Assistant, *High Performance Computing Division, Computer and Information Networking Center, National Taiwan University (Jul 2008 ~ Apr 2009)*

Test and management of clusters (HP 584/1216 cores clusters, IBM 64 cores SMP) in C&INC. Provide tutorials on parallel programming (MPI, OpenMP, Hadoop) and commercial parallelization packages (Matlab, Mathematica, Discovery Studio and Material Studio) to assist research groups in the university without computer science background.

Learning Partners from Dean's List Project, *Office of Academic Affairs, National Taiwan University (2006 ~ 2008)*

It is a voluntary teaching assistantship project which only recruits senior students with qualified English ability and annual GPA in the top 10%. Participating TA serves as peer tutor for international students at National Taiwan University.

Proficiency

Computer languages

C/C++, Java, Java Script, PHP, SQL, HTML, Perl, Python, Matlab

Human languages

English (fluent), Mandarin Chinese (native), Japanese (basic)