KOCSEA SYMPOSIUM 2007

1. Prof. Sungdeok Cha (KAIST)

Title: Collaboration between Industry and Academia

2. Prof. Yoonsuck Choe (Texas A&M)

Title: TBD (for Student Session Presentation)

3. Prof. Soon M. Chung (Write State University)

Title: Text Document Clustering Based on Neighbors

Abstract:

Clustering is a very powerful data mining technique for topic discovery from text documents. The partitional clustering algorithms, such as the family of k-means, are reported performing well on document clustering. They treat the clustering problem as an optimization process of grouping documents into k clusters so that a particular clustering criterion function is minimized or maximized. Usually, the cosine function, which measures the similarity between two documents, is used as the criterion function. In [Guha:2000], new concepts of neighbors and link are proposed to measure the closeness of two data points, and the calculation is supported by the neighbor matrix of the data set. If two documents are similar enough, they are considered as neighbors of each other. The link between two documents represents the number of their common neighbors. Instead of just considering the pairwise similarity, neighbors and link involve the global information into the measurement of the closeness of two documents. In this paper, we propose to utilize the information provided by the neighbor matrix for the family of k-means algorithms in three aspects: a new method to select initial centroids based on the ranks of candidate documents; a new clustering criterion function which uses a combination of the cosine and link functions; and a new heuristic function for selecting a cluster to split based on the neighbors of centroids. Our experimental results on real-life data sets demonstrated that our proposed methods can significantly improve the performance of document clustering in terms of accuracy.

4. Mr. Intark Han (ETRI)

Title: "Home Network and its R&D Activities in ETRI"

5. Dr. SeJune Hong (IBM Research)

Title: The cooperative research relation of IBM and universities

Abstract:

I will describe the cooperative research relation of IBM and universities, which has a long history. I will center my presentation on computer science area. Grants, joint studies, visiting scholars, internships, leave of absence to universities, fellowships, recruiting efforts, and joint technical seminars, etc. will be discussed. IBM Research considers university collaboration a critically important avenue for developing new ideas.

6. Dr. Jaeyeon Jung (Intel)

Title: Privacy Oracle---automatic detection of private information leaks from everyday applications

Abstract:

Unbeknownst to users, applications collect information on users, operating systems, network configurations and send the information back to a remote server for profiling, targeted advertisement, and software diagnostics. In this talk, I present a tool and techniques that assess the privacy vulnerabilities of an application, particularly when its protocol is unknown. Our tool, Privacy Oracle, uses a virtual machine technique to automatically run an application, generate inputs, and gather network traces and analyzes output network traffic using a sequence alignment technique. I conclude the talk with our surprising discoveries of many privacy vulnerabilities from many popular applications.

7. Prof. Eunyoung Kang (CalState, LA)

Title: Scene Transition and Foreground Extraction for Virtual Tour Systems

Abstract:

The presentation introduces two upgraded features for constructing a virtual tour system that provides expanded views using multiple TIP(Tour Into Picture) models: a scene transition method and a foreground extraction method. The proposed scene transition method uses approximated camera motions recovered by image registration technique. The foreground extraction method combines an image matting algorithm for precise boundary computation and a line-preserving image in-painting technique.

8. Prof. Steve Kang (UC Merced Chancellor)

Title: Traits of 21st century leaders in science, technology, and engineering

Abstract:

Traits of 21st century leaders in science, technology, and engineering, especially for emerging high technology and knowledge industry. I will present some review of trends and discuss emerging challenges that require disruptive creativity, innovation, and much more effective industry-university collaborations and co-evolution.

9. Prof. Chong-Kwon Kim (Seoul National University)

Title: Practical Rate Adaptation Considering Link-layer Collision

Abstract:

Although rate adaptation is designed to cope with the variation of wireless channels and achieve higher system spectral efficiency, its design needs careful consideration of the cross-layer dependency such as link-layer collisions. However, most existing practical rate adaptations only have focused on the time-varying characteristics of wireless channels, thereby ignoring the impact of collisions. As a result, they may lose their effectiveness due to unnecessary rate downshift operations misbehaved by the collisions. Some recently proposed rate adaptation schemes estimate the number of active stations and filter out lank-layer collisions from total failures. However, the schemes to estimate the number of active stations are not always amenable to implementation. We propose a new scheme to estimate the number of active stations by observing the “retry” fileds. To show the practicality of the scheme, we implement the scheme using Mad Wifi and perform an extensive experiment in real environments. The experiment shows that the proposed scheme effectively adapt to network environments.

10. Prof. Yoohwan Kim (UNLV)

Title: Network attacks and defenses in practice

Abstract:

This presentation will walk through the steps of network attacks and demonstrate the tools commonly used in those attacks.

11. Prof. Nenad Medvidovic (USC)

Title: Software Architectures and Embedded Systems

Abstract:

This talk will provide a high-level overview of challenges faced by software engineering researchers in the arena of highly distributed, resource constrained, mobile, and embedded systems. The particular perspective we will take is that of software architectures -- key design idioms that underlie any software system. We will introduce several techniques developed at USC that span software architecture modeling, analysis, implementation, deployment, and dynamic adaptation in embedded systems settings. Finally, we will discuss our on-going research and technology transition efforts.

12. Prof. Sue Moon (KAIST)

Title: What We Do Online Today and Tomorrow

Abstract:

Internet, emerging as the 5th utility, is becoming the converging venue for all types of communications, from emails to instant messages and from VoIP phones to UGC exchanges. Ever-changing and increasing demand on the Internet poses challenges and opportunities for networking researchers and industry alike. In this talk we analyze how we use today's Internet and conclude with some insights for future use. In particular, we present recent analysis on UGC systems and deployed IPTV systems and review their impact on underlying network designs.

User Generated Content (UGC) is re-shaping the way people watch video and TV, with millions of video producers and consumers. In particular, UGC sites are creating new viewing patterns, social interactions, empowering users to be more creative, and developing new business opportunities. Based on a large amount of data collected, we provide an in-depth study of YouTube and Daum UCG systems. In particular, we study the popularity life-cycle of videos, the intrinsic statistical properties of requests and their relationship with video age, and the level of content aliasing or of illegal content in the system. We also provide insights on the potential for more efficient UCG VoD systems (e.g., utilizing P2P systems or making better use of caching). Finally, we discuss the opportunities to leverage the latent demand for niche videos that are not reached today due to information filtering effects or other system scarcity distortions.

In recent years, Telcos worldwide have deployed IPTV networks to offer cable TV-like services over the IP backbones. However, as the amount of content and channels increase and users demand more interactive and asynchronous viewing, current IPTV architectures are showing clear limitations. To this extent, we study next-generation Telco-managed IPTV architectures, where P2P distributed systems are integrated in Telco’s TV set-top boxes or home gateways.

We conclude this talk with a discussion on new services, their inefficiencies, and their commercial consequences.

13. Dr. Changwon Park (LGE)

Title: Introduction to LG Electronics

Abstract: not available

14. Prof. Jungwoo Ryoo (Pen State Univ. Altoona)

Title: Mobile Device-Resident Malware Detection through a Behavior-Centric Ontology

Abstract:

While the convenience and entertainment value a mobile device (such as cellular phones and PDAs) brings is substantial, it also presents unprecedented challenges to the efforts to protect the information stored in the device and the privacy of its users. A new generation of hackers are starting to create malware specifically designed for mobile devices to disrupt people's lives and steal sensitive or confidential information for financial gain. Despite the graveness of the problem, little systematic research has been conducted to understand mobile device-resident malware. To address this lack of research and to help practitioners in the field, the speaker proposes a comprehensive taxonomy of mobile device-resident malware and a risk analysis framework.

15. Prof. Medy Sanadidi (UCLA)

Title: PCE (Path Characteristics Estimation) and its Applications

Abstract:

We discuss various network path characteristics of interest and the techniques used for their estimation. Examples include narrow link capacity; bottleneck node buffer size; load intensity, path-persistence, and responsiveness. A number of PCE techniques have
been proposed recently including CapProbe, Pathload and others. They vary in their accuracy, speed, an costs. Once reasonably accurate estimates are obtained, the estimates can be used for better congestion control, better video streaming, and other applications. To illustrate the benefits of PCE, we present a few examples including TCP Westwood (TCPW) and the Video Transfer Protocol (VTP), an alternative to TFRC which works well over error prone wireless links. We compare the performance of such schemes to widely used protocols and to newer proposals, and discuss remaining work in this research area.

16. Prof. Kang G. Shin (U of Michigan)

Title: A Spectrum Booster with Adaptive Sensing and Agility

Abstract:

Static spectrum allocation has resulted in low spectrum efficiency in licensed bands and poor performance of radio devices in crowded unlicensed bands. To remedy these problems, we exploit the concept of ``spectral agility'' such that radio devices can dynamically utilize idle spectral bands.

We proposed three basic mechanisms to realize spectral-agile networks: spectrum opportunity discovery, spectrum opportunity management, and spectrum use coordination. These mechanisms are prototyped and implemented in the ns-2, and the control overhead incurred by using spectral agility is evaluated. Our analysis and siumlation results demonstrate that the proposed spectral agility improves spectral utilization by up to 90% for IEEE 802.11 WLAN in an efficient, distributed, and automatic manner. Also, our adaptive spectrum sensing discovers up to 22% more spectrum opportunities.

This is joint work with Chun-Ting Chou, Hyoil Kim, and Bechir Hamdaoui.

17. Prof. Sang Hyuk Son (U of Virginia)

Title: Real-time Data and Event Services in Wireless Sensor Networks

Abstract:

Data and event services are one of the key applications of sensor networks. We present a discussion of the challenging research
issues related to data and event services, and present our approach that provides an efficient way for users to identify and detect events of interest.

18. Prof. George Wang (Cal State U Northridge)

Title: Open Source Software - Is It Changing the World?

Abstract:

Thanks to the brilliant development of Internet technology, over the past decade, open source software (OSS) has been one of top software-related agenda in academia as well as industry. Multiple perspectives (for example, software engineering, social science,
psychology, law, business and economy, etc.) on OSS have already been conducted, and there is still on-going debate. OSS, nevertheless, has already begun to affect our society and the world in a variety of aspects ranging from business to society to education. This talk briefly addresses OSS from the business and economy perspective with the background and basic concepts of OSS.

19. Prof. Jongwook Woo (CalState, LA)

Title: Introduction to Web Service Architecture for e-Business applications

Abstract:

Web Service has been popular to reuse or provide the existing application to the third party in platform and language independency. In this paper, Two Web Service approaches are introduced (message and service oriented), especially for e-Business applications. Besides, Web Service platforms such as AXIS and gSOAP are compared in language independency.