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RESEARCH INTERESTS Computational problems relating to dynamic social network analysis – community dynamics, social information summarization and representation.

EDUCATION

2005 to present **Ph.D. student, Computer Science, with concentration in Arts, Media and Engineering**
Arizona State University, Tempe, AZ
Dissertation: *Community Analysis in Dynamic Multi-relational Social Networks*
Advisor: Dr. Hari Sundaram
GPA: 4.0/4.0
Expected date of graduation: June 2010

1999 to 2001 **M.S. in Computer and Information Science**
National Chiao Tung University, Taiwan
Thesis: *The Synthesis of Trees in Chinese Landscape Painting*
Advisor: Prof. Zen-Chung Shih
GPA: 3.8/4.0 (average score: 92.28/100)

1995 to 1999 **B.S. in Computer and Information Science**
National Chiao Tung University, Taiwan
GPA: 3.6/4.0 (last two years: 3.9/4.0, average score: 81.13/100)

AWARDS AND HONORS

IBM PhD Fellowship Award (Academic year: 2009-2010)
IBM Ph.D. Fellowship Program, a worldwide program which honors Ph.D. students who have an interest in solving problems fundamental to innovation.

Emerging Leaders in Multimedia
Emerging Leaders in Multimedia Fourth Annual Watson Workshop, IBM T. J. Watson Research Center, Hawthorne, NY, 2008

Student Excellence Award (Academic year: 2007-2008, 2008-2009)
School of Arts, Media and Engineering, Arizona State University
Supported through the Kauffman Campuses Initiative, for students who exemplify the entrepreneurial and innovative nature of interdisciplinary research.

Best Paper Award
Paper: *Chinese Ink Rendering for Trees Using Outline Drawing and Texture Strokes*, in Proceedings of 2002 International Workshop on Advanced Image Technology (IWAIT).

EXPERIENCE

2005 to present

Research Assistant

School of Arts, Media and Engineering, Arizona State University, Tempe, AZ

Advisor: Dr. Hari Sundaram

- Research on real-time visualization of large scale community dynamics in social media. Develop a live visualization to support community discovery in the context of everyday social media use.
- Research on community analysis, discovery of community structures and evolution, in dynamic multi-relational social networks. Published 6 papers and a journal article. Submitted a journal for review.
- Research on summarization of time-evolving, shared social media stream. Published 5 papers and submitted a journal for review.
- Research on mixed initiative authoring and presentation tool designed to facilitate the creation, communication and exchange of complex information within diverse organizations. Conduct multiple iterations of user studies to evaluate the design process. Published 2 short papers and submitted a paper for review. Prepare a journal submission.
- Research on spam blog detection based on blog temporal dynamics. Published 3 papers and a journal article.
- Supervise and mentor master students.
- Participate in writing a NSF grant proposal with Dr. Hari Sundaram and Dr. K. Selcuk Candan.

2008 Summer

Research Intern

IBM T.J Watson Research Center, Hawthorne, NY

Supervisor: Dr. Ravi B. Konuru

Project: Multi-relational analysis of community dynamics in an enterprise

- Researched on the challenge of enterprise collaboration analysis and information search, in particular how to adaptively combining people's interactions observed within various online social media with different types of dynamic and static social and organizational relationships.
- Invented and developed a novel graph-based multi-tensor mining framework that extracts community structures from various social contexts and interactions. Published 2 papers and filed a patent in 2008.
- Conducted extensive experiments on a collection of IBM Lotus Dogear dataset, and the results suggest that our technique is scalable and able to extract meaningful work communities. Conduct experiments on prediction of users' future tagging interests, and the results show that our prediction significantly outperforms baseline methods up to a magnitude.

2007 Summer

Research Intern

NEC Labs America, Cupertino, CA

Supervisor: Dr. Belle L. Tseng

Project: Community analysis in time-evolving social networks

- Researched on the challenge of discovering sustained and evolving communities. Invented and developed a novel evolutionary probabilistic clustering framework to analyze communities and their evolutions in a unified process. Published a paper and a journal article.
- Conducted extensive experiments on synthetic datasets and real-world blog

and paper co-authorship datasets, and the results suggest our proposed method stably reveals interesting community dynamics which are not directly obtainable from traditional methods.

2006 Summer

Research Intern

NEC Labs America, Cupertino, CA

Supervisor: Dr. Belle L. Tseng

Project: Combating spams in the blogosphere

- Researched on the challenge of spam blog (splog) detection and evaluation. Proposed a novel time-sensitive evaluation framework. Invented and developed a detection method that combines traditional content features with regularity-based temporal and link features. Submitted a paper that was the only research on splog detection selected in the TREC 2006 Conference Proceedings.
- Developed collective splog annotation tools to establish ground truth.
- Conducted extensive experiment on real world blog dataset with 90% accuracy.

2001 to 2004

Supervising Engineer

Advance and Innovation Center, Ulead Systems, Inc., Taiwan

- Video Editing and Authoring: Researched and developed tools to enable automatic video summarization and editing, artistic image stylization effect creations and 3D transition effect creation for video authoring. Filed 2 patents in 2004 which were issued in 2006.
- 3D effect and Animation: Designed 3D Particle Systems to efficiently simulate natural phenomena including fire, smoke, clouds and snow. Designed object-based NPR effects to render 3D models in stylistic styles such as cartoon and oil painting. Filed a patent in 2002 which was issued in 2006.
- Digital Imaging: Designed 2D particle systems, an edge preserving blur filter for reducing noise of image, a visual effect to simulate night scene and to render a photorealistic moon in the sky, and image-based NPR effects for rendering images in simulated painting styles. Filed a patent in 2004 which was issued in 2006.

1999 to 2001

Teaching Assistant

Department of Computer and Information Science, National Chiao Tung University, Taiwan

- Courses: *Computer Graphics*, and *Advanced Computer Graphics*

1997 to 2001

Research Assistant

National Center for High-performance Computing, Taiwan

Advisor: Dr. Fang-Pang Lin

- National Numerical Wind Tunnel Project: Developed visualization for particle trajectory and tracking for plastic extrusion simulation. The visualization included VR and animation.
- Material Database for Electronic Packages: Developed a material database and information visualization system for numerical analysis of electronic package.

2000

Intern

Digimax Corporation, Taiwan

- Developed 3D visual effects and 3D graphics format transcoder in Maya, a high-end computer graphics and modeling software, to support film post-production.

1999

Intern

National Chiao Tung University Library, Taiwan

- Developed a query system to support search and browsing in Faculty Publication Database of National Chiao Tung University.

1998

Undergraduate Research

Department of Computer and Information Science, National Chiao Tung University, Taiwan

- Developed an MPEG-4 application that enables users to interact with the video content streamed from a remote MPEG-4 server.

PUBLICATIONS

Electronic copies of my publications can be downloaded at:
<http://www.public.asu.edu/~ylin56/pub.html>

Overview

Bibliography follows this overview.

I. Social Network Analysis – Community Discovery in Dynamic, Rich Media Social Networks

The research studies several aspects of community analysis in dynamic, rich media social networks:

(1) From actions to relation – how to discover communities from online social actions. Related publications include papers [17,25].

(2) Community evolution – how to extract sustained communities in dynamic networks and analyze the evolution of these communities. Related publications include journal [3] and paper [16].

(3) Multi-relational community analysis – how to extract communities from data of interactions with rich contexts and track the dynamics of membership and topics of interests within communities. Related publications include a forthcoming journal [1] and papers [7,13].

(4) Summarization of time-evolving, social media stream – how to summarize community generated media content that allows exploring shared media and tracking community interests. Related publications include book chapter [2] and papers [10,12,14,15,19].

II. Adversarial Information Retrieval on the Web – Splog Detection

The research concerns spam blog (splog) detection based on link structure and temporal properties of blogs. Related publications include journal [4] and papers [16,18,20,24].

III. Computer Graphics – Non-photorealistic Rendering

The research was conducted prior to my Ph.D. study, in the area of computer graphics, with a particular concentration on non-photorealistic and artistic rendering. Related publications: [21,26,27].

Journal articles
/ book chapters

1. Lin, Y.-R., Sundaram, H. and Kelliher, A. (2010), Multi-modal Characterization of Social Network Communities. In Handbook of Social

Networks Technologies and Applications, 2010, Springer, forthcoming.

2. Lin, Y.-R., Choudhury, M. D, Sundaram, H. and Kelliher, A. (2010), Discovering Emergent Semantics and Their Diffusion in Social Media. In International Journal of Multimedia Tools and Applications (MTAP), special issue on Hot Research Topics in Multimedia, Springer, 2010, forthcoming.
3. Lin, Y.-R., Chi, Y., Zhu, S., Sundaram, H. and Tseng, B. L. (2009). Analyzing Communities and Their Evolutions in Dynamic Social Networks. ACM Transactions on Knowledge Discovery from Data (TKDD), special issue on Social Computing, Behavioral Modeling, and Prediction, Volume 3, Issue 2 (April 2009)
4. Lin, Y.-R., Sundaram, H., Chi, Y., Tatemura, J. and Tseng, B. L. (2008). Detecting Splogs Via Temporal Dynamics Using Self-Similarity Analysis. ACM Transactions on the Web (TWEB) Volume 2, Issue 1 (February 2008)
5. Lin, Y.-R., Sun, J., Castro, P., Konuru, R., Sundaram, H. and Kelliher, A. Community Discovery via Metagraph Factorization.
6. Lin, Y.-R., Sundaram, H., Choudhury, M. D. and Kelliher, A. Discovery Multi-relational Structure in Social Media Streams.
7. Lin, Y.-R., Sun, J., Castro, P., Konuru, R., Sundaram, H. and Kelliher, A. (2009). MetaFac: Community Discovery Via Relational Hypergraph Factorization. Proceedings of the 15th ACM SIGKDD International Conference on Knowledge discovery and data mining (SIGKDD 2009).
8. Spicer, R., Lin, Y.-R. and Kelliher, A. (2009). Nextslideplease: Agile Hyperpresentations. Proceedings of the 2009 ACM International Conference on Multimedia (MM 2009) (video track).
9. Spicer, R., Lin, Y.-R., Kelliher, A. and Sundaram, H. (2009). A Slide-Ware Application to Support Discursive Presentations. Proceedings of the 2009 ACM International Conference on Multimedia (MM 2009) (technical demo).
10. Lin, Y.-R., Sundaram, H., Choudhury, M. D. and Kelliher, A. (2009). Temporal Patterns in Social Media Streams: Theme Discovery and Evolution Using Joint Analysis of Content and Context. IEEE International Conference on Multimedia and Expo (ICME 2009).
11. Choudhury, M. D., Sundaram, H., Lin, Y.-R., John, A. and Seligmann, D. D. (2009). Connecting Content to Community in Social Media via Image Content, User Tags and User Communication. IEEE International Conference on Multimedia and Expo (ICME 2009).
12. Lin, Y.-R., Sundaram, H. and Kelliher, A. (2009). JAM: Joint Action Matrix Factorization for Summarizing a Temporal Heterogeneous Social Network. Proceedings of the International AAAI Conference on Weblogs and Social Media (ICWSM 2009).
13. Lin, Y.-R., Sun, J., Castro, P., Konuru, R., Sundaram, H. and Kelliher, A. (2009). Extracting Community Structure through Relational Hypergraphs. Proceedings of the 18th International Conference on World Wide Web (WWW 2009) (poster).
14. Lin, Y.-R., Sundaram, H. and Kelliher, A. (2009). Summarization of Large Scale Social Network Activity. IEEE International Conference on Acoustics,

Journal
submission
under review

Referred
conference
papers

Speech and Signal Processing (ICASSP 2009).

15. Lin, Y.-R., Sundaram, H. and Kelliher, A. (2008). Summarization of Social Activity over Time: People, Actions and Concepts in Dynamic Networks. Proceeding of the 17th ACM conference on Information and knowledge management (CIKM 2008) (poster).
16. Lin, Y.-R., Chi, Y., Zhu, S., Sundaram, H. and Tseng, B. L. (2008). FacetNet: A Framework for Analyzing Communities and Their Evolutions in Dynamic Networks. Proceeding of the 17th International Conference on World Wide Web (WWW 2008).
17. Lin, Y.-R., Sundaram, H., Chi, Y., Tatemura, J. and Tseng, B. (2007). Blog Community Discovery and Evolution Based on Mutual Awareness Expansion. Proceedings of the 2007 IEEE/WIC/ACM International Conference on Web Intelligence (WI 2007).
18. Lin, Y.-R., Sundaram, H., Chi, Y., Tatemura, J. and Tseng, B. L. (2007). Splog Detection Using Content, Time and Link Structures. IEEE International Conference on Multimedia and Expo (ICME 2007).
19. Lin, Y.-R. and Sundaram, H. (2007). Blog Antenna: Summarization of Personal Blog Temporal Dynamics Based on Self-Similarity Factorization. IEEE International Conference on Multimedia and Expo (ICME 2007).
20. Lin, Y.-R., Chen, W.-Y., Shi, X., Sia, R., Song, X., Chi, Y., Hino, K., Sundaram, H., Tatemura, J. and Tseng, B. L. (2006). The Splog Detection Task and a Solution Based on Temporal and Link Properties. The Fifteenth Text REtrieval Conference Proceedings (TREC 2006).
21. Way, D.-L., Lin, Y.-R. and Shih, Z.-C. (2002). The Synthesis of Trees in Chinese Landscape Painting Using Silhouette and Texture Strokes. Journal of WSCG (WSCG 2002).
22. Lin, Y.-R., Sun, J., Cao, N. and Liu, S. ContextTour: Contextual Visual Analysis on Dynamic Multi-relational Clustering.
23. Spicer, R., Kelliher, A., Lin, Y.-R and Sundaram, H. (paper title omitted for blind review)
24. Lin, Y.-R., Sundaram, H., Chi, Y., Tatemura, J. and Tseng, B. L. (2007). Splog Detection Using Self-Similarity Analysis on Blog Temporal Dynamics. Proceedings of the 3rd International Workshop on Adversarial Information Retrieval on the Web (AIRWeb 2007).
25. Lin, Y.-R., Sundaram, H., Chi, Y., Tatemura, J. and Tseng, B. L. (2006). Discovery of Blog Communities Based on Mutual Awareness. Proceedings of the 3rd Annual Workshop on the Weblogging Ecosystems: Aggregation, Analysis and Dynamics (WWE 2006).
26. Way, D.-L., Lin, Y.-R. and Shih, Z.-C. (2002). Chinese Ink Rendering for Trees Using Outline Drawing and Texture Strokes. Proceedings of 2002 International Workshop on Advanced Image Technology (IWAIT 2002, **Winner of Best Paper Award**)
27. Master Thesis: Lin, Y.-R. (2001). The Synthesis of Trees in Chinese Landscape Painting. Computer and Information Science, National Chiao

Paper
submission
under review

Peer-reviewed
workshop
papers

Other
publications

Tung University.

- PATENTS**
- Lin, Y.-R. and Wang, C.-Y. Slideshow Composition Method. Patent filed in 2004. Issued: No. I267743, Taiwan IPO, December 2006.
- Lin, Y.-R. Method for Edge Detection and Contour Stroke Generation, and Computer Readable Medium Thereof. Patent filed in 2004. Issued: No. I256599, Taiwan IPO, June 2006.
- Lin, Y.-R., Hsu, S.-F. and Wang, E. System and Method for the Automatic and Semi-Automatic Media Editing. Patent filed in 2004. Issued: No. I233753, Taiwan IPO, December 2005.
- Lin, Y.-R. and Wu, A. Profile Rendering Method for Three-Dimensional Object to Create Continuous Picture Frames by Abstracting Silhouette, Surface Boundaries and Creases. Patent filed in 2002. Issued: No. I267798, Taiwan IPO, December 2006.
- INVITED TALKS**
- Discovering Social Movement in Social Media*. Local to Global Justice Teach-in 2010, forthcoming.
- Community Discovery in Dynamic, Rich Media Social Networks*. National Taiwan University, Taiwan, April 2009.
- Summarization of Community Shared Social Media*. IBM T. J. Watson Research Center, Hawthorne, NY, October 2008.
- PROFESSIONAL SERVICES**
- Program Committee Member**
ICWSM Data Challenge Workshop 2009
- Reviewer**
IEEE Transactions on Multimedia
ACM Transactions on Multimedia Computing, Communications and Applications
ACM Transactions on Information Systems
Journal of Distributed and Parallel Databases
ACM SIGKDD Conference (2009)
Workshop on Social Network Mining and Analysis (2009)
ACM Multimedia (2008)
ACM Multimedia (2009)
International Conference on Intelligent User Interfaces (2010)
- SKILLS**
- Extensive experience in data mining, database management, online data collection, information visualization, computer graphics and animation, and image processing. In-depth understanding of object-oriented programming paradigms and windows based programming.
Language/Script: C/C++, JAVA, Python, JavaScript, PHP, SQL, etc.
Package/Application: MATLAB, Eclipse, OpenGL, Flex, Processing, VTK, Tcl/TK, MFC, WIN32, C++ STL, etc.
- ACTIVITIES**
- AME Student Association, 2006-2007
Taiwan Study Society, 2007-2009

CITIZENSHIP Taiwan citizenship. Student with F-1 visa.

REFERENCES Available upon request.