Zifei SHAN

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Research Objective

- I like mining data for knowledge, and creating new interdisciplinary applications that impact the society. Specifically, I am intrigued by questions in large social and information networks, in particular network dynamics, information diffusion and visualization, and human behaviors in real-world settings.

Academics

- **Stanford University** — CA, USA
  M.S. Candidate in Computer Science — *Sept. 2013 – Present*
- **Peking University** — Beijing, China
  B.S. in Computer Science — *Sept. 2009 – Jun. 2013*
  - GPA: 3.82/4.00 (CS major); 3.63/4.00 (overall), ranked 25/150 (department)
- **Technion—Israel Institute of Technology** — Haifa, Israel
  Research Exchange Student in Faculty of Electrical Engineering — *Sept. 2012 – Feb. 2013*

Research

- **Automated Creation of Universal User Interfaces** — *Mar. 2012 – Present*
  Group leader, advised by Daniel A. Freedman (Technion)
  - Automating the creation of front-end user interfaces on heterogeneous platforms for information systems, by designing description languages and their interpreters on these platforms.
  - Designed a description language for various forms, and a smart form-layout algorithm. Implemented within Web UI: built a system translating high-level abstract form descriptions to its 2D layout on a webpage.
- **Ranking and Analyzing Baseball Networks** — *Aug. 2012 – Jun. 2013*
  Independent Research
  - Raised a ranking algorithm named *GameRank*, for networks with multiple interplaying indicators. Applied it on Major League Baseball (MLB) data. Evaluated the algorithm by comparing with prestigious rankings.
  - Mined MLB networks on their evolution, attributes and anomalies. Conducted visual analysis on the communities and bridges in the network.
- **Detecting Sybil Groups in Online Social Networks (OSNs)** — *Jul. 2011 – May. 2013*
  Supervised by Jing Jiang and Yafei Dai, Peking University. In cooperation with Renren inc.
  - Detected $\sim$1M sybil accounts and found sybil groups in Renren (largest OSN in China), based on the attribute of social degree and low popularity. Measured sybil groups on user statistics, relationship between communities, and network evolution including increasing and merging pattern.
- **Profile-Cloning Attacks in OSNs** — *Jun. 2012 – Dec. 2012*
  Independent Research
  - Improved the attack pattern by snowball sampling and iteration attack. Conducted experiments in Renren to test its threats. Raised a back-end defending architecture called *CloneSpotter*, based on IP prefix.
- **Assessing the Impact of User-interaction Transparency on Renren's User Behavior** — *Jan. 2012 – Mar. 2012*
  Supervised by Jing Jiang and Yafei Dai, Peking University. In cooperation with Renren inc.
  - Constructed latent interaction graphs of user browsing behavior, and compared their structures against those of visible interaction graphs and social graphs. Analyzed their conductance, modularity and mixing time.

Publications

AVAILABLE AT: http://www.zifeishan.org

- **Zifei Shan**, Shiyingxue Li, and Yafei Dai. GameRank: Ranking and Analyzing Baseball Network. In *Proc. 2012 International Conference on Social Informatics (SocialInformatics).* (Acceptance rate: 11.5%)

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- **Zifei Shan**, Haowen Cao, Jason Lv, Cong Yan, and Annie Liu. Enhancing and Identifying Cloning Attacks in Online Social Networks. In *Proc. the 7th International Conference on Ubiquitous Information Management and Communication (IMCOM / ICUIMC '13).* (Acceptance rate: 29%)
- Jing Jiang, **Zifei Shan**, Wenpeng Sha, Xiao Wang, and Yafei Dai. Detecting and Validating Sybil Groups in the Wild. In *Proc. 32nd International Conference on Distributed Computing Systems Workshops (ICDCSW '12).*

Presentation

- **GameRank: Ranking and Analyzing Baseball Network** — Washington DC, USA
  ASE International Conference on Social Informatics '12 — *Dec. 16, 2012*
- **Enhancing and Identifying Cloning Attacks in Online Social Networks** — Kota Kinabalu, Malaysia
  Video presentation at *ACM IMCOM(ICUIMC) '13* — *Feb. 18, 2013*

Course / School Projects

DATA MINING AND VISUALIZATION:

- **MLB illustrator: visualizing and ranking baseball networks** — http://zifeishan.org/mlb_illustrator/
  Course project of SI 508, advised by Prof. Qiaozhu Mei (University of Michigan) — *Aug. 2012 – Sept. 2012*
  - Visualized the MLB game data as a heterogeneous network, provided statistics, and ranked the batting and pitching ability of players, for all historical data over 50 years. Built an online visualization system. Used this system for visual analysis in baseball networks, in my independent research (see *GameRank* above).
- **Question answering system on Chinese Wikipedia** — *Oct. 2011 – Dec. 2011*
  Team leader; designed QA algorithm using Chinese NLP techniques.
- **WordNet viewer featuring force-driven graph of words** — *May. 2011 – Jun. 2011*
  Visualized the dynamic relationship graph with an originated spring-model layout algorithm.

SYSTEMS:

- **Beijing 3-Day Startup Website** — http://www.beijing3ds.org/
  Global startup event & school project in PKU and THU. Website back-end designer. — *Aug. 2012 – Oct. 2012*
  - Set up the web server, email server, and application form handler. Handled verification, PDF generation, and email notification; successfully processed all the applications in Beijing3DS event.
- **Kademlia network distributed simulation** — *Oct. 2010 – Jan. 2011*
  Team leader; implemented a UDP-based P2P network using Kademlia DHT.
- **Minijava compiler for Android** — *Sept. 2011 – Dec. 2011*
  Worked on optimization; realized general optimizations based on dafaflow analysis.

Honors

- **National Scholarship (Rank in class: 1/35),** awarded twice, ranking first in both — *2011 and 2012*
- **Meritorious Winner of Interdisciplinary Contest in Modeling (ICM)** — *Feb. 2012*
- **The CCF Outstanding Undergraduate Award,** *China Computer Federation* — *Oct. 2012*

Skills

- **Programming languages:** C/C++, Java, JavaScript, Python, PHP, HTML, SQL
- **Unix tools:** Git, Bash scripting, MakeFile, NGINX, Vim
- **Manuscript preparation:** LaTeX, MatPlotLib, gnuplot, Inkscape
- **Network Theory:** Attended course *SI 508–Networks: Theory and Application* by UMich. Learned network metrics, modeling, ranking, classification, evolution, information diffusion and visualization.
- **Miscellaneous:** Design thinking, Brainstorming, D3.js, Prefuse, Gephi, Hadoop, OpenMP, MPICH2, C++ Boost

Personal

- **Captain of EECS Baseball Team,** *Peking University* — *2010 – 2012*
- **Student class leader,** *Peking University* — *2009 – 2013*
- **Passionate about Chinese tea.** Other hobbies: cooking, the Game of Go, music, photography.