BIN WU

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Department of Natural Language Processing, Baidu Inc. *2015-Present*
Senior Research Engineer

EDUCATION

Hong Kong University of Science and Technology *2011-2015*
Ph.D. in Computer Science & Engineering
-Advisors: Prof. Andrew Horner, Prof. Qiang Yang

Shanghai Jiao Tong University *2007-2011*
B.E. in Information Security & Engineering
-Advisor: Prof. Xinghao Jiang

RESEARCH INTERESTS

Music and multimedia information retrieval, data mining, machine learning.

WORK EXPERIENCE

Senior Research Engineer, Baidu Inc. Oct. 2015 - Present

· Duer is a world-leading AI secretary developed by Baidu. Duer aims to provide services such as movie and food search and ordering, as well as chatting with users. I am currently working on Duer's recommender system.

Lead Scientist & CTO of China Branch, Sensbeat Ltd. Mar. 2014 - Jul. 2015

· Sensbeat is a mobile application, where users can share their emotions using music to their social network. Our goal is to provide users an extremely simple and elegant way to share their treasured moments, hereby music recommendation technique comes in. I led the technical team to automatically recommend music for users to express their emotions. I have also led the team to enter the mainland China market. I left because AI is currently not the core of this application oriented startup.

Large Scale Recommendation System Using Spark GraphX @ Recommendation Group, Tencent Inc. Jun. 2014 - Sep. 2014

· Graph algorithms have attracted high attention in Tencent Recommendation Group due to its excellent generality. During this period, I independently studied Spark GraphX and developed a recommender system using YouTube's video recommendation algorithm. The system has successfully sped up the model iteration to less than one hour.

SELECTED RESEARCH EXPERIENCE

Modeling Music Emotion Dynamics Sep. 2013 - Jan. 2014

· Traditional music emotion recognition methods have considered each song as a single instance and have built models based on song-level features, which has led to performance bottleneck in recent years. In this work, we address music emotion recognition using a novel hierarchical Bayesian model with sentence-level music and lyrics features. It captures music emotion dynamics with a song-segment-sentence hierarchical structure. It also considers emotion correlations between both music segments and sentences. Experimental results show that our model outperforms several state-of-the-art methods.

Crowdsourced Time-sync Video Tagging Sep. 2012 - Apr. 2013

· This work proposes a new application which extracts time-sync video tags by automatically exploiting crowdsourced comments data from video websites such as Nico Nico Douga, where videos are commented on by online crowd users in a time-sync manner. The biggest challenge is that users have interaction when they provide comments, which makes it hard to extract accurate tags from users' comments. We have designed a novel temporal and personalized topic model to approach this application. Log-likelihood analyses and user studies on large datasets show that the proposed model outperforms several state-of-the-art baselines in video tagging quality.

Multiple Instance Learning for Horror Scene Detection Dec. 2009 - Apr. 2011

· I independently proposed this project and recruited four undergraduate students to work together for this research project when I was a junior student. We investigated horror scene detection as a special Multiple Instance Learning problem, and proposed methods to fuse the horror scenes multiple features. Also, we developed a website to collect peoples scores on horror scenes and the score ranking information was adapted to the labeling process. The website attracted over 6000 visiting at the first day placed on the Internet and was SJTU 2nd hottest topic on 2010-5-31. This project has been awarded as Excellent Project in *The 2nd Shanghai Undergraduate Student Innovation Program*.

SELECTED PUBLICATIONS

- **Bin Wu**, Erheng Zhong, Andrew Horner, Qiang Yang. *Music Emotion Recognition by Multi-label Multi-layer Multi-instance Multi-view Learning,* In Proceedings of The 22nd ACM International Conference on Multimedia, Orlando, FL, 3–7 Nov 2014 (ACM MM 2014. Acceptance rate: 20%. Oral.).
- **Bin Wu**, Erheng Zhong, Ben Tan, Andrew Horner, Qiang Yang. *Crowdsourced Time-sync Video Tagging using Temporal and Personalized Topic Modeling.* 20th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, New York, NY, 24–27 Aug 2014 (ACM SIGKDD 2014. Acceptance rate: 14.6%. Oral).
- **Bin Wu**, Andrew Horner, Chung Lee. *Investigating correlations between musical timbre and emotion.* Journal of the Audio Engineering Society 62.10 (2014): 663-675.
- **Bin Wu**, Andrew Horner, Chung Lee. *The Identification of Salient Timbral Features in Sustained Musical Instrument Tones Equalized in Attack Time and Spectral Centroid,* In Proceedings of 40th International Computer Music Conference, Athens, Greece, 14-20 Sep 2014 (ICMC 2014. Oral).
- **Bin Wu**, Andrew Horner, Chung Lee. *Emotional Predisposition of Musical Instrument Timbres with Static Spectra.* In Proceedings of 15th International Society for Music Information Retrieval Conference, Taipei, China, 24-31 Oct 2014 (ISMIR 2014).
- **Bin Wu**, Chung Lee, Simon Wun, Andrew Horner. *Investigating Correlation Between Musical Timbres and Emotions.* In Proceedings of 14th International Society for Music Information Retrieval Conference, Curitiba, Brazil, 3-8 Nov 2014 (ISMIR 2013).
- **Bin Wu**, Erheng Zhong, Derek Hao Hu, Andrew Horner, Qiang Yang. *Semi-Supervised Music Emotion Recognition with Social Tagging.* In Proceedings of SIAM Conference on Data Mining 2013, Austin, TX, 2–4 May 2013 (SDM 2013). (Oral presentation. Acceptance rate: 14.3%).
- **Bin Wu**, Xinghao Jiang, Tanfeng Sun, Shanfeng Zhang, Xiqing Chu, Chuxiong Shen, Jingwen Fan. *A Novel Scheme for Horror Scene Detection on Devised Multiple Instance Learning.* In Proceedings of the 17th International Conference on MultiMedia Modeling (MMM 2011).

SELCTED AWARDS

-Professor Samuel Chanson Best Teaching Assistant Award (2011-12)
-Yin Zhu, Erheng Zhong, **Bin Wu**. *Nokia Mobile Data Challenge, Champion of Task 1 (Semantic Place Prediction)*, 2012

SKILLS

Frequently Used	Spark, GraphX, Map-Reduce, Java, Scala, Matlab, Vim, Shell, LaTeX
Acquaintance	Python, C/C++/C#, WPF(C#), ASP.NET(C#), HTML, Verilog QT(C++), ActionScript, Perl.
Languages	Mandarin (native), Cantonese (native), English (proficient).

OTHER SPECIALTY AND EXPERIENCE

-Team member of HKUST, SJTU Badminton Team
-Amateur guitar and trumpet player, pop singer
-UG Hall Tutor @ HKUST Hall V.