

## Dawen Liang

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<http://dawenl.github.io>

### EDUCATION

- Columbia University, New York, NY** 2012.9 – 2016.6  
Ph.D. in *Electrical Engineering*  
Advisor: Prof. Dan Ellis and Prof. David Blei  
Thesis: Understanding music semantics and user behavior with probabilistic latent variable models
- Carnegie Mellon University, Pittsburgh, PA** 2010.9 – 2012.5  
M.S. in *Music and Technology*
- Fudan University, Shanghai, China** 2006.9 – 2010.6  
B.S. in *Computer Science*

### WORKING EXPERIENCE

- Graduate Research Assistant**, Columbia University 2012.9 – 2016.6  
Laboratory for the Recognition and Organization of Speech and Audio (*LabROSA*)  
Conduct research on:
  - Statistical machine learning and applications to music understanding.
  - User behavior modeling and recommender systems.
- Recommendation Systems Scientist Intern**, Pandora Radio 2015.5 – 2015.8  
Playlist Team Mentors: Dr. Erik Schmidt and Dr. Keki Burjorjee
  - Investigate hybrid approaches to collaborative filtering with both user feedback and music content.
- Research Intern**, Adobe Systems Incorporated Summer 2013, 2014  
Adobe Creative Technology Laboratory Mentors: Dr. Matt Hoffman and Dr. Gautham Mysore
  - Work on novel Bayesian hierarchical Product-of-Filters model of audio.
  - Explore statistical model based approach to speech denoising and dereverberation.
- Research Assistant**, Carnegie Mellon University 2010.9 – 2012.5  
Computer Music Group
  - Work on *Human Computer Music Performance* project and related Machine Learning/Music Information Retrieval research with Prof. Roger Dannenberg.
- Software Development Engineer Intern**, Amazon.com 2011.5 – 2011.8  
Kindle – Digital Delivery Team
  - Design and implement an efficient scheduling algorithm for periodicals delivery (deployed in production).

### AWARDS

- Best poster presentation award**, New York Academy of Sciences Machine Learning Symposium 2016
  - For “Modeling User Exposure in Recommendation”.
- Best poster presentation award**, ISMIR 2014
  - For “mir\_eval: A Transparent Implementation of Common MIR Metrics”.
- Student Travel Grant**, ISMIR 2014
- Best student paper award**, ISMIR 2013
  - For “Beta Process Sparse Nonnegative Matrix Factorization for Music”.

**PUBLICATIONS****Peer-reviewed Journal Articles**

- *Methods and Prospects for Human Computer Performance of Popular Music*, Roger B. Dannenberg, Nicolas E. Gold, **Dawen Liang**, Guangyu Xia, in *Computer Music Journal*, 38(2):36-50, 2014.
- *Active Scores: Representation and Synchronization in Human-Computer Performance of Popular Music*, Roger B. Dannenberg, Nicolas E. Gold, **Dawen Liang**, Guangyu Xia, in *Computer Music Journal*, 38(2):51-62, 2014.

**Peer-reviewed Conference Papers and Workshop Contributions**

- *Factorization Meets the Item Embedding: Regularizing Matrix Factorization with Item Co-occurrence*, **Dawen Liang**, Jaan Altosaar, Laurent Charlin, David M. Blei, in *Proceedings of the 10th ACM Conference on Recommender Systems (RecSys)*, USA, 2016.
- *Modeling User Exposure in Recommendation*, **Dawen Liang**, Laurent Charlin, James McInerney, David M. Blei, in *Proceedings of the 25th International Conference on World Wide Web (WWW)*, Canada, 2016.
- *Content-Aware Collaborative Music Recommendation Using Pre-trained Neural Networks*, **Dawen Liang**, Minshu Zhan, and Daniel P. W. Ellis, in *Proceedings of the 16th International Society for Music Information Retrieval (ISMIR)*, Spain, 2015.
- *Landmarking Manifolds with Gaussian Processes*, **Dawen Liang** and John Paisley, in *International Conference on Machine Learning (ICML)*, France, 2015.
- *librosa: Audio and Music Signal Analysis in Python*, Brian McFee, Colin Raffel, **Dawen Liang**, Daniel P. W. Ellis, Matt McVicar, Eric Battenberg, and Oriol Nieto, in *Proceedings of the 14th Python in Science Conference (SciPy)*, 2015.
- *Speech Dereverberation using a Learned Speech Model*, **Dawen Liang**, Matthew D. Hoffman, and Gautham J. Mysore, in *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Australia, 2015.
- *Beta Process Non-negative Matrix Factorization with Stochastic Structured Mean-Field Variational Inference*, **Dawen Liang** and Matthew D. Hoffman, in *NIPS Workshop on Advances in Variational Inference*, Montreal, 2014.
- *Codebook-based Scalable Music Tagging with Poisson Matrix Factorization*, **Dawen Liang**, John Paisley, and Daniel P. W. Ellis, in *Proceedings of the 15th International Society for Music Information Retrieval (ISMIR)*, Taiwan, 2014.
- *mir\_eval: A Transparent Implementation of Common MIR Metrics*, Colin Raffel, Brian McFee, Eric J. Humphrey, Justin Salamon, Oriol Nieto, **Dawen Liang**, and Daniel P. W. Ellis, in *Proceedings of the 15th International Society for Music Information Retrieval (ISMIR)*, Taiwan, 2014.
- *Speech Decoloration based on the Product-of-Filters Model*, **Dawen Liang**, Daniel P. W. Ellis, Matthew D. Hoffman, and Gautham J. Mysore, in *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Italy, 2014.
- *A Generative Product-of-Filters Model of Audio*, **Dawen Liang**, Matthew D. Hoffman, and Gautham J. Mysore, in *Proceedings of the International Conference on Learning Representations (ICLR)*, Canada, 2014.
- *Beta Process Sparse Nonnegative Matrix Factorization for Music*, **Dawen Liang**, Matthew D. Hoffman, and Daniel P. W. Ellis, in *Proceedings of the 14th International Society for Music Information Retrieval (ISMIR)*, Brazil, 2013 (**Best Student Paper Award**).
- *Segmentation, Clustering, and Display in a Personal Music Database for Musicians*, Guangyu Xia, **Dawen Liang**, Roger B. Dannenberg, and Mark J. Harvilla, in *Proceedings of the 12th International Society for Music Information Retrieval (ISMIR)*, USA, 2011.
- *A Framework for Coordination and Synchronization of Media*, **Dawen Liang**, Guangyu Xia, and Roger B. Dannenberg, in *Proceedings of the 11th International Conference on New Interfaces for Musical Expression (NIME)*, Norway, 2011.

**TEACHING EXPERIENCE****Teaching Assistant**

- ELEN E4903 Machine Learning, Columbia University, Spring 2016.
- EECS E6892 Bayesian Models for Machine Learning, Columbia University, Spring 2014, Fall 2015.
- COMS W4721 Machine Learning for Data Science, Columbia University, Spring 2015.
- ELEN E4810 Digital Signal Processing, Columbia University, Fall 2012, Fall 2013.
- 15-323 Computer Music Systems and Information Processing, Carnegie Mellon, Spring 2012.
- 15-322 Introduction to Computer Music, Carnegie Mellon, Spring 2011.

**SKILLS**

**Languages** Python (Numpy/Scipy), R, MATLAB, Java, C/C++, GO, SQL

**Software** Vim, Eclipse, Xcode, Weka, Hadoop

**Experience** Object-oriented programming and unit tests; TCP/IP, network programming, and concurrency programming; familiar with Windows/Mac OS/Linux development environment.

**PROFESSIONAL ACTIVITIES****Reviewer:**

- International Conference on Machine Learning (ICML) 2015
- International Joint Conferences on Artificial Intelligence (IJCAI) 2015
- International Society for Music Information Retrieval (ISMIR) 2014 – 2016
- Neural Information Processing Systems (NIPS) 2013 – 2016
- IEEE Transactions on Signal Processing

**REFERENCES**

Available upon request