Dawen Liang

7LE4 Schapiro CEPSR, Columbia University, New York, NY 10027
(412) 482 - 4067, Email: dliang@ee.columbia.edu
http://dawenl.github.io

EDUCATION

Columbia University, New York, NY 2012.9 – 2016.6 (expected)
Ph.D. Candidate 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 – present
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).

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

- *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. (Preliminary version appears in *ICML Workshop on Machine Learning for Music Discovery*, 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 (Selected for oral presentation).
- *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 (Selected for oral presentation).
- *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 (Selected for oral presentation, **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 (Selected for oral presentation).

TEACHING EXPERIENCE

Teaching Assistant

- COMS W4721 Machine Learning for Data Science, Columbia University, Spring 2015.
- EECS E6892 Bayesian Models for Machine Learning, Columbia University, Spring 2014, Fall 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.

SELECTED COURSEWORK

Theory Statistical Inference Theory, Probability Theory (Measure-theoretic), Convex Optimization, Sparse Representation and High-Dimensional Geometry, Advanced Digital Signal Processing

Application Statistical Modeling and Data Analysis, Bayesian Data Analysis, Machine Learning, Probabilistic Graphical Models, Multimedia Databases and Data Mining, Speech Recognition

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.

AWARDS and ACTIVITIES

Best student paper award, ISMIR 2013
- For "Beta Process Sparse Nonnegative Matrix Factorization for Music".

Best poster presentation award, ISMIR 2014
- For "mir_eval: A Transparent Implementation of Common MIR Metrics".

Student Travel Grant, ISMIR 2014

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

REFERENCES

Available upon request