Phillip B. Kirlin

Rhodes College
2000 North Parkway
Memphis, Tennessee 38112
http://www.cs.rhodes.edu/∼kirlinp
kirlinp@rhodes.edu

Research Interests

My research interests lie in the field of music informatics, an interdisciplinary area that uses and develops new computational methods and models for processing and producing music and musical information. Specifically, I am interested in advancing the state of research in artificial intelligence, machine learning, and probabilistic modeling by using music-related problems as motivators. I am intrigued by this field precisely because it combines computational study with an art form that requires a great deal of contextual knowledge.

Education

- Ph.D., Computer Science, University of Massachusetts Amherst (2014)
  Dissertation title: *A Probabilistic Model of Hierarchical Music Analysis.*
  Advisor: David Jensen.

- M.S., Computer Science, University of Massachusetts Amherst (2007)
  Advisor: Paul Utgoff

- B.S., Computer Science, *summa cum laude*, University of Maryland, College Park (2004)

Professional Appointments

- Associate Professor (2018–present), Department of Mathematics and Computer Science, Rhodes College, Memphis, Tennessee.

- Assistant Professor (2012–2018), Department of Mathematics and Computer Science, Rhodes College, Memphis, Tennessee.

- Visiting Research Scholar (January–May 2015), College of Fine Arts, Boston University, Boston, Massachusetts.

Peer-Reviewed Publications

Note: Rhodes College undergraduate students whom I advised are underlined.

Refereed Journal Articles

J1. **Phillip B. Kirlin** and Jason Yust. Analysis of analysis: Using machine learning to evaluate the importance of music parameters for Schenkerian analysis. *Journal of Mathematics and Music*, 10(2):127–148, 2016.

Papers Published in Conference Proceedings (acceptance based on peer-review of full paper)

Note: Papers marked with a superscript "O" also included an oral presentation at the conference. Papers marked with a superscript "P" also included a poster presentation at the conference.

C11.[P] **Phillip B. Kirlin**. A corpus-based analysis of syncopated patterns in ragtime. In *Proceedings of the 21st International International Society for Music Information Retrieval Conference*, 2020 (to appear).

C10.[P] <u>Joel Michelson</u>, <u>Hong Xu</u>, and **Phillip B. Kirlin**. Probabilistic generation of ragtime music from classical melodies. In *Proceedings of the Sixth International Conference on Mathematics and Computation in Music*, pages 350–360, 2017.

C9.[P] **Phillip B. Kirlin**. Global properties of expert and algorithmic hierarchical music analyses. In *Proceedings of the 17th International Society for Music Information Retrieval Conference*, pages 640–646, 2016.

C8.[P] **Phillip B. Kirlin** and <u>David L. Thomas</u>. Extending a model of monophonic hierarchical music analysis to homophony. In *Proceedings of the 16th International Society for Music Information Retrieval Conference*, pages 715–721, 2015.

C7.[P] **Phillip B. Kirlin** and David D. Jensen. Using supervised learning to uncover deep musical structure. In *Proceedings of the 29th AAAI Conference on Artificial Intelligence*, pages 1770–1776, 2015.

C6.[O] **Phillip B. Kirlin**. A data set for computational studies of Schenkerian analysis. In *Proceedings of the 15th International Society for Music Information Retrieval Conference*, pages 213–218, 2014.

C5.[P] **Phillip B. Kirlin** and David D. Jensen. Probabilistic modeling of hierarchical music analysis. In *Proceedings of the 12th International Society for Music Information Retrieval Conference*, pages 393–398, 2011.

C4.[P] **Phillip B. Kirlin**. Using harmonic and melodic analyses to automate the initial stages of Schenkerian analysis. In *Proceedings of the 10th International Society for Music Information Retrieval Conference*, pages 423–428, 2009.

C3.[P] **Phillip B. Kirlin** and Paul E. Utgoff. A framework for automated Schenkerian analysis. In *Proceedings of the Ninth International Conference on Music Information Retrieval*, pages 363–368, 2008.

C2.[O] Paul E. Utgoff and **Phillip B. Kirlin**. Detecting motives and recurring patterns in polyphonic music. In *Proceedings of the 32nd International Computer Music Conference*, pages 487–494, 2006.

C1.[P] **Phillip B. Kirlin** and Paul E. Utgoff. VoiSe: Learning to segregate voices in explicit and implicit polyphony. In *Proceedings of the Sixth International Conference on Music Information Retrieval*, pages 552–557, 2005.

Invited Papers (acceptance based on peer-review of extended abstract)

I1.[P] Jason Yust and **Phillip B. Kirlin**. The multileveled rhythmic structure of ragtime. In *Proceedings of the 9th International Conference on Culture and Computing*, 2021.

Professional Activities

Note: Talks and posters are only listed here if they were not mentioned above.

Posters (acceptance based on full paper or extended abstract)

P2. **Phillip B. Kirlin** and Jason Yust. Analysis of analysis: Importance of different musical parameters for Schenkerian analysis. Northeast Music Cognition Group Meeting, April 2015.

P1. **Phillip B. Kirlin**. Automated layout of Schenker graphs by computer. Second International Conference on Mathematics and Computation in Music, June 2009.

Papers Presented at Workshops (acceptance based on extended abstract)

W1.$^{\text{O}}$ **Phillip B. Kirlin** and Jason Yust. Analysis of analysis: Importance of different musical parameters for Schenkerian analysis. Eighth International Workshop on Machine Learning and Music, 2015.

Invited Talks

T2. "Probabilistic Modeling of Schenkerian Analysis." Music Theory Speakers' Series, University of Massachusetts Amherst, March 2015.

T1. "Algorithms and Probabilistic Modeling of Hierarchical Music Analysis." Massachusetts Institute of Technology, April 2012.

Conferences and Workshops Attended

- International Society for Music Information Retrieval Conference (ISMIR): 2005, 2008, 2009, 2011, 2014, 2015, 2016, 2020.

- Association for the Advancement of Artificial Intelligence Conference (AAAI): 2015.

- International Conference on Mathematics and Computation in Music (MCM): 2009, 2017.

- International Workshop on Machine Learning and Music (MML): 2015.

- Northeast Music Cognition Group Meeting (NEMCOG): 2015.

- ACM Special Interest Group on Computer Science Education Technical Symposium (SIGCSE): 2012, 2013, 2014, 2015, 2016.

- Consortium for Computing Sciences in Colleges Mid-South Conference (CCSC-MS): 2014, 2016.

Presentations by Research Students

Note: Presentations are only listed here if they were not mentioned above. All authors listed are Rhodes College undergraduates.

S11. Zaid Baba. "Algorithmic Generation of Ragtime Music." Rhodes College Undergraduate Research and Creative Activity Symposium, 2018.

S10. Zaid Baba. "Exploring the Relationship Between Music Dynamics and Schenkerian Analysis." Rhodes College Undergraduate Research and Creative Activity Symposium, 2017.

S9. Joel Michelson and Hong Xu. "Probabilistic Generation of Ragtime Music from Classical Melodies." Rhodes College Undergraduate Research and Creative Activity Symposium, 2017.

S8. Evan Deere, Corrie Moore, Katie Wiener, and Max Tilka. "Not the Same Old Paper Test: A Technological Alternative for Measuring Knowledge." Rhodes College Undergraduate Research and Creative Activity Symposium, 2016.

S7. Matthew Jackoski, Alex P. Hofmann, Daniel Morris, and Eric DeWitt. "Using Eye-Tracking and Voice Analysis to Detect Lies." Rhodes College Undergraduate Research and Creative Activity Symposium, 2016.

S6. Keely Hicks, Mike Shield, Trey Tamura, and Khang Nguyen. "Children and Coding." Rhodes College Undergraduate Research and Creative Activity Symposium, 2016.

S5. Yuanshuo Li, Thomas Threlkeld, Connor Jerow, and Tara Lehman. "Quadcopter Safety Function." Rhodes College Undergraduate Research and Creative Activity Symposium, 2016.

S4. Alex Abdo, Kris Baker, Bryton Herlong, and Casey Means. "LAVA: Location-based Access Verification/Authentication." Rhodes College Undergraduate Research and Creative Activity Symposium, 2016.

S3. David Thomas. "A Polyphonic Model for Computational Music Analysis." Rhodes College Undergraduate Research and Creative Activity Symposium, 2015.

S2. Rachel Elledge, Nate Condrey, Patrick McCusker. "Learning Motivations for Non-Player Characters in an Open-World Game." Rhodes College Undergraduate Research and Creative Activity Symposium, 2014.

S1. Alyssa Harris, Kory Yates, Matt McCaleb. "MoodPlay: A Playlist Generator Based on Mood and Time Preferences." Rhodes College Undergraduate Research and Creative Activity Symposium, 2014.

National and International Service

- Conference Program Committees
  - Association for the Advancement of Artificial Intelligence Conference (AAAI), 2017, 2018.
  - International Society for Music Information Retrieval Conference (ISMIR): 2020, 2021.
  - International Conference on Mathematics and Computation in Music (MCM): 2015.

- Reviewer for *The Journal of Mathematics and Music*, *Music Perception* and *Knowledge-Based Systems*.

- Judge for undergraduate research projects, ACM Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2012.

Research Grants

- Title: Correlations and Variations in the Rhythmic Structure of Music
  Sponsor: Rhodes College Faculty Development Endowment Grant
  Date: 6/2021 – 8/2021
  Amount: $5,000

- Title: Deep Learning for Algorithmic Music Composition
  Sponsor: Rhodes College Faculty Development Endowment Grant
  Date: 6/2020 – 8/2020
  Amount: $5,000

- Title: Improving Algorithmic Ragtime Composition Algorithms
  Sponsor: Rhodes College Faculty Development Endowment Grant
  Date: 6/2018 – 8/2018
  Amount: $5,000

- Title: Algorithmic Rearrangement of Piano Compositions in a Ragtime Style
  Sponsor: Rhodes College Faculty Development Endowment Grant
  Date: 6/2017 – 8/2017
  Amount: $5,000

- Title: Investigating the Effect of Harmony on Hierarchical Music Analysis
  Sponsor: Rhodes College Faculty Development Endowment Grant
  Date: 6/2015 – 8/2015
  Amount: $5,000

Institutional Service

Rhodes College

- Faculty Professional Interest Committee, Fall 2020–present.

- Foundations Curriculum Committee, Fall 2016–Spring 2019 (chair, 2018–2019 AY).

- Campus Climate Working Group, Spring 2016.

- Admissions Open House, 2015, 2013, 2012.

- Undergraduate Research and Creative Activity Symposium Planning Committee: 2014–2016 AYs.

Rhodes College Department of Mathematics and Computer Science

- Committee Member, Department Strategic Planning Task Force, 2018–2019 AY.

- Committee Member, Department Search Committee for a Tenure-Track Computer Scientist, 2017–2018 AY.

- Outside Committee Member, Department of Physics Search Committee, 2015–2016 AY.

- Computer Science Club Advisor, Fall 2014–present.

- Senior Seminar Advisor, 2015–2016 AY, Spring 2014.

- Senior Mathematics Student Project Advisor, Sumner Magruder, 2015–2016 AY.

Honors and Awards

- Nominee, Distinguished Teaching Award, University of Massachusetts Amherst, 2009–2010 AY.

- Outstanding Teaching Assistant Award, Department of Computer Science, University of Massachusetts Amherst, 2008–2009 AY.

- Honorable Mention, Graduate Research Fellowship Program, National Science Foundation, 2004.

Teaching Experience

Where available, number of students/number of sections taught is provided in square brackets.

- Rhodes College

  - Computer Science 141: Programming Fundamentals (S21 [49 students/2 sections], F19, S19 [25], F18 [58/2], S18 [27], F15 [56/2], F13 [50/2], S13 [29], F12 [27]).
  - Computer Science 142: Object-Oriented Programming (S17 [55/2], S14 [29]).

- – Computer Science 172: Discrete Structures (F17 [25], F16 [27], S16 [11], F14 [28], F13 [11], S13 [14]).
- – Computer Science 241: Data Structures and Algorithms (S21 [23], F20 [31], S19[18], S18 [23]).
- – Computer Science 340: Databases (F19 [24], S18 [25], F16 [26], S14 [22]).
- – Computer Science 360: Programming Languages (F17 [23], F15 [20], S13 [16]).
- – Computer Science 372: Artificial Intelligence (F20 [26], F18 [25], S17 [27], F14 [14], F12 [9])
- – Computer Science 485/486: Senior Seminar (S16 [22], F15 [22], S14 [6]).

- University of Massachusetts Amherst (instructor of record)

  - – Computer Science 120: Introduction to Problem Solving with the Internet (F07, S07, F06, Sum05).

- Center for Talented Youth Summer Intensive Studies Program

  - – Fundamentals of Computer Science (Summers 2011, 2010, 2009)

Pedagogical Grants

- Title: Re-Envisioning the Computer Science Curriculum at Rhodes College
  Sponsor: Rhodes College, Hill Grant
  PIs: Betsy Sanders, Phillip Kirlin, Catie Welsh, Brian Larkins, Ross Sowell, and Matt Lang
  Date: 6/2020 – 8/2020
  Amount: $10,092.19

  This Hill grant allowed the computer science program to redesign its curriculum to bring it in line with current standards. While the introductory programming sequence was last redesigned in 2015, the rest of the curriculum had not been revisited in at least twelve years. The original curriculum was designed to be managed and taught by two computer science professors, and with the department now having tripled in size, it was time to redesign the curriculum.

- Title: Data Analytics at Rhodes College
  Sponsor: Rhodes College, Hill Grant
  PIs: Ibrahim Abdelrazeq, Sesha Dassanayake, Phillip Kirlin, Brian Larkins, Betsy Sanders, Chris Seaton, Catherine Welsh
  Date: 6/2018 – 8/2018
  Amount: $3700

  This Hill grant allowed us to identify and plan the optimal way to introduce Data Analytics to the Rhodes College curriculum. Based on an initial one-day workshop, we researched data analytics and data science programs at other institutions and contacted Rhodes alumni studying or working in relevant fields to determine what kinds of courses would have been good additions to their degrees. At the end of the summer, we held a second one-day workshop to compare the information collected, discuss the appropriate ways to integrate Data Analytics into the curriculum, and plan the corresponding curricular changes.

- Title: Standardizing and Improving the Core Introductory Sequence in Computer Science
  Sponsor: Rhodes College, Hill Grant
  PIs: Phillip Kirlin, Betsy Sanders, Catherine Welsh
  Date: 6/2015 – 8/2015
  Amount: $9682.82

  This Hill Grant allowed the three Rhodes College computer science professors to redesign the curriculum of the three-course introductory sequence in computer science. In consulting with the ACM curriculum guidelines, we picked course topics, designed syllabi, and collected lesson plans and course materials,

including exams, quizzes, lab assignments, and lecture materials. Our goals were to design a curriculum to support an increasing number of students, increase diversity in the major, and incorporate innovative and modern pedagogical strategies.