

Raymond V. Migneco

CONTACT INFORMATION 819 N. 2nd Street *Voice:* (484) 459-3297
Apt. B *E-mail:* ray.migneco@gmail.com
Philadelphia, PA 19123 USA *Homepage:* music.ece.drexel.edu/people/rmigneco

RESEARCH HIGHLIGHTS **Researched Techniques for Analysis and Synthesis of Guitar Performance** including computational modeling of resonant string behavior and the excitation signals describing specific articulations made by the performer.

Developed an Audio Processing Library for Flash Applications, which provides developers with simple access to common digital signal processing (DSP) routines. This library has been used to create audio-centric applications requiring real-time and complex interaction with music and sound.

Designed Collaborative, Music- and Sound-based Activities for psychoacoustic data collection and K-12 learning using web platforms. These activities have been used to illustrate particular science, technology, engineering and math (STEM) concepts in K-12 curricula and collect data regarding human perception of musical instrument sounds.

EDUCATION **Drexel University**, Philadelphia, Pennsylvania USA

Ph.D. Candidate, Electrical Engineering, (expected graduation date: June 2012)

- Dissertation: “A System for the Analysis and Synthesis of Expressive Guitar Performance”
- Advisor: Youngmoo E. Kim

M.S., Electrical Engineering, June 2011

The Pennsylvania State University, University Park, Pennsylvania USA

B.S., Electrical Engineering, May 2005

- GPA: 3.76/4.00

PUBLICATIONS Migneco, R., and Kim, Y. E. (2011). “Excitation Modeling and Synthesis for Plucked Guitar Tones,” Proceedings of the 2011 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, New Paltz, NY: WASPAA.

Migneco, R., Schmidt, E. M., Scott, J. J. and Kim, Y. E. (2011). “Modeling Instrument Tones as Dynamic Textures,” Proceedings of the 2011 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, New Paltz, NY: WASPAA.

Migneco, R., and Kim, Y. E. (2011). “Modeling Plucked Guitar Tones Via Joint Source Filter Estimation,” Proceedings of the 14th IEEE Digital Signal Processing Workshop and 6th IEEE Signal Processing Education Workshop, Sedona, AZ: DSP/SPE.

Migneco, R., and Kim, Y. E. (2011). “Tone Bender: A Collaborative Activity For Signal Processing Education & Psychoacoustic Data Collection,” Proceedings of the 14th IEEE Digital Signal Processing Workshop and 6th IEEE Signal Processing Education Workshop, Sedona, AZ: DSP/SPE.

Kim, Y. E., Batula, A. M., Migneco, R., Richardson, P., Dolhansky, B., Grunberg, D., Morton, B., Prockup, M., Schmidt, E. M., and Scott, J. (2011). “Teaching STEM Concepts Through Music Technology and DSP,” Proceedings of the 14th IEEE Digital Signal Processing Workshop and 6th IEEE Signal Processing Education Workshop, Sedona, AZ: DSP/SPE.

Scott, J., Migneco, R., Morton, B., Hahn, C. M., Diefenbach, P. and Kim, Y. E. (2010). "An audio processing library for MIR application development in Flash," Proceedings of the 2010 International Society for Music Information Retrieval Conference, Utrecht, Netherlands: ISMIR.

Kim, Y. E., Schmidt, E. M., Migneco, R., Morton, B. G., Richardson, P., Scott, J., Speck, J. A. and Turnbull, D. (2010). "Music emotion recognition: a state of the art review," Proceedings of the 2010 International Society for Music Information Retrieval Conference, Utrecht, Netherlands: ISMIR.

Kim, Y. E., Doll, T. M., and Migneco, R., "Collaborative online activities for acoustics education and psychoacoustic data collection," in IEEE Transactions on Learning Technologies, 2009.

Doll, T. M., Migneco, R., and Kim, Y. E., "Web-based sound and music games with activities for STEM education," Accepted to International IEEE Consumer Electronics Societys Games Innovations Conference, 2009.

Migneco, R., Doll, T. M., Scott, J. J., Hahn, C., Diefenbach, P. J., and Kim, Y. E., "An audio processing library for game development in Flash," Accepted to International IEEE Consumer Electronics Societys Games Innovations Conference, 2009.

Doll, T. M., Migneco, R., Scott, J. J., and Kim, Y. E., "An audio DSP toolkit for rapid application development in Flash," Accepted to IEEE International Workshop on Multimedia Signal Processing, 2009.

Doll, T. M., Migneco, R., and Kim, Y. E., "Online activities for music information and acoustics education and psychoacoustic data collection," in Proceedings International Conference on Music Information Retrieval, 2008.

CONFERENCE
PRESENTATIONS

An Audio Processing Library for Game Development in Flash - International Consumer Electronics Society Games Innovation Conference 2009, London, England, August 25-29, 2009.

ACADEMIC
EXPERIENCE

Drexel University, Philadelphia, Pennsylvania USA

Graduate Student

Fall 2007 - present

Includes current dissertation research, Ph.D. and Masters level coursework and research.

Program Coordinator - Summer Music Technology

Summer 2010, 2011

Facilitated planning and implementation of a week-long learning experience in music technology for over twenty high school students at Drexel University. Responsibilities included developing interactive lessons in acoustics and digital audio, coordinating planning meetings, delegating tasks, ordering supplies, and configuring the required computer hardware and software for activities.

Teaching Assistant

Fall 2007 - Winter 2010

Collaborated with instructors to develop content for lecture and laboratory-based courses in electrical & computer engineering. Responsibilities include grading homework, exams and leading laboratory sessions.

- Electronics Laboratory
- Processing of the Human Voice
- Intro to Signal Processing Laboratory
- Intro to Entertainment Engineering
- Electrical & Computer Engineering Senior Design

NSF Discovery K-12 Fellow

Spring 2008 - Spring 2009

Developed lessons for high school students to facilitate the learning of science, technology, engineering & math (STEM) disciplines through interactive, audio-based lessons. Collaborated with instructors at the Creative & Performing Arts (CAPA) High School in Philadelphia to integrate lessons into math and science curricula.

The Pennsylvania State University, University Park, Pennsylvania USA

Teaching Assistant, Electronics Lab

Spring 2005

Assisted students with laboratory assignments for an introductory lab on circuits and devices.

HKN Tutor

Fall 2004 - Spring 2005

Provided assistance to undergraduate students enrolled in core electrical engineering courses.

PROFESSIONAL
EXPERIENCE

ReallyEnglish (www.reallyenglish.com)

Signal Processing Software Engineer

Fall 2011

Provided consulting services to implement speech processing algorithms for a Flash-based language-learning module. Tasks included writing, debugging and testing optimized ActionScript code for pitch extraction and rate compression/expansion of speech signals. Provided software deliverables to the client by established deadlines and promptly addressed requests and concerns.

Sunoco Chemicals, Marcus Hook, Pennsylvania USA

Electrical & Instrumentation Reliability Engineer

August 2005 - August 2007

Responsibilities included addressing electrical and instrumentation equipment concerns to prevent downtime and avoid product losses. Tasks included troubleshooting faulty equipment, developing preventative maintenance plans and identifying projects to improve the plant's electrical and instrumentation infrastructure.

HONORS AND
AWARDS

Eta Kappa Nu (HKN) Electrical & Computer Engineering Honor Society (member since 2005)

Drexel University

Dean's List Honors: Fall 2007 - present

The Pennsylvania State University

Dean's List Honors: Fall 2001 - Spring 2005

Graduated with Distinction

TECHNICAL SKILLS

- Programming Languages: MATLAB, C, C++, Objective C, ActionScript 3.0, PHP, MySQL, HTML, Java
- Productivity: Microsoft Office (Word, Powerpoint, Excel), iWork Suite (Pages, Keynote), L^AT_EX
- Applications: Adobe Flash and Photoshop, PureData, GarageBand, iMovie
- Operating Systems: Mac OS, iOS, Linux (Ubuntu), Windows
- Lab Tools: Digital Multimeter, Oscilloscope, Function Generator, Spectrum Analyzer, AC/DC Power Supplies, Soldering Iron