

Patrick J. Richardson
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Curriculum Vitae



Education:

Masters of Science	in	Electrical Engineering	Drexel University	Sept., 2010
Bachelors of Arts	in	Psychology	Oberlin College	May, 2004

Teaching Employment:

Faculty **Drexel University** Philadelphia, PA **2015 – Present**

- **Digital Media:** WordPress, PhotoShop, Illustrator, Flash

Faculty **Art Institute of Philadelphia** Philadelphia, PA **2011 – Present**

- **Audio Production:**
 - Authored curriculum: *Practical PsychoAcoustics*; workshop course on perception of music, models of attention, health and safety for audio professionals
 - *Live Sound 1 & 2* (venue studies, system design),
 - *Listening/Analysis/Acoustics* (sound control, analytical listening)
 - *Electronics 1 & 2* (math, soldering & kits circuits),
 - Multiple **Independent Studies** for *electronic music instrument designs*, using Arduino, PureData, SuperCollider, JavaScript, and other audio / MIDI tools.
- **Game Art and Design:**
 - *Programming for Artists* (*OOP concepts in Unity & JavaScript*),
 - *Interactive Audio* (history and technique of game sound)
 - *Interactive Storytelling* (script-writing for non-linear media),
- **Interactive Media/Web Design:**
 - *Intro to Scripting* (HTML, CSS) & *Intermediate Scripting* (JavaScript),
 - *User-centered Design* & *Usability Testing* of user interfaces,
- Jury panelist for student Senior Portfolio prep and critique: analog circuit study, MIDI works, live concert technical documentation, business plan & budget, commercial editing

Teaching Technology:

- **Audio and Multimedia:** Pro Tools, Logic Pro, Adobe Audition, pureData, Reaktor
- **Physical Computing:** Arduino, RaspBerry Pi
- **Analytical Scripting, Data Analysis & Visualization:** Matlab, Java, SPSS/PSAW
- **Authoring, Collaboration & Publishing:** LateX & BibTex, Adobe Creative Suite

Software Languages:

- **Warm:** C++, JavaScript, HTML5, CSS3, Python
- **Mild:** C, PHP/SQL, ActionScript

Notable student-projects advised:

- The [Mazij online DAW](#) a web-browser-based audio mixing / editing / collaboration tool by [Sultan Al Masoud](#)
- [Sing Assist](#), web-based pitch-detection and music-education tool/proof-of-concept, senior Project by [Jason Zogheb](#) (AiPh % 2016)
- [The Rhomidus](#), custom MIDI controller hardware; senior Project by [Callum McQueen](#) (AiPh % 2016), incorporating microcontrollers by Alias and Arduino.
- [Project Roger](#), a hexa-naural recording prop; project-in-progress by [Andrea McKowski](#) (AiPh % 2015) at University of Colorado Media Forensics program.

Research, Outreach & Incubation Work:

Teaching at Philadelphia Hacktory

- Design / lead workshop on audio / MIDI in PureData **Spring, 2017**
- TA for Workshop on the Arduino microcontroller platform **Summer, 2015**

Research Assistant Drexel University Philadelphia, PA **2006 – 2010**

- One-year [graduate research study](#) on music video-games with \$27k grant from National Association of Music Merchants (NAMM) Foundation
- Designed/taught "science of audio" lesson plans in Drexel Summer Music Tech Program

Instructor Drexel Summer Music Technology (SMT) Program **Summers, 2007-10**

- Taught special lessons to Philadelphia-Area high school students, using music software to present principles of physics, math, acoustics and sound design.
- Designed and advised individual projects in modeling real world echoic phenomena through graphically programmed audio/DSP environments (*pureData*).

Researcher/Instructor for the Drexel Discovery K-12 (DK12) project. **2009 - 2010**

- Designed and presented special science/technology/math focused lesson plans at Philadelphia's Creative and Performing Arts Academy (CAPA).
- Observed student performance and learning experiences with paper and web-data-based surveys.
- Analyzed survey data and created case reports for DK-12 program's final reports.

Select UnderGraduate/Graduate Coursework:

- Advanced **Mathematics**: Linear Algebra, Multivariate Calculus, Differential Equations
- Statistical **Digital Signal Processing (DSP)**: Probability & Random Variables, Detection & Estimation Theory, Image Processing, DSP for Sound and Hearing, Voice Processing
- **Research Psychology**: Research Methods, Psychology of Human-Computer Interaction, Developmental Psychology, Abnormal Psychology, Psychology of Emotion, PsychoBiology of Arts

Select Musical Work

[PowerLoader](#)

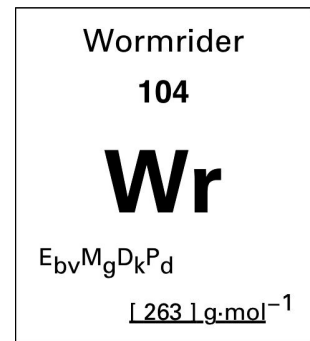
2013 **“Salvage”**
vocals, synths, drum machines,
recording, mixing editing,
design & customization of analog instruments
logo design and photo manipulation



[Wormrider](#)

2012 **“Anubis / This Planet is an Egg”**
drums, vocals, production assistance,
design customization of analog instruments
logo designs, web content, live concert rider drafting

2012 **“Darkness of Futures Past”**
drums, vocals, production assistance,
cassette tape design/printing/packaging



[music.for.headphones](#)

2011 **Secret History of the World**
drums, backup vocals

2008 **Still in the Light, volume 2**
drums, backup vocals

2006 **Kosmonaut**
drums, production assistance

2006 **go.see.girls.rock**
drums, production assistance

2006 **frequency of oscillation**
drums, production assistance



[selfTest](#)

2003 **by / for**
drums, vocals, instrument repair, sampling



Concert Production Experience:

Production Assistant World Cafe Live Philadelphia, PA **2006–7, 2010–11**

- sound reinforcement, staging, and lighting in multi-stage music venue: supporting over 9 concert video shoots for HD-TV broadcast (HD-Net™) and DVD production (“Live at the World Cafe”™ series), with live radio broadcast (88.5 FM WXPN)

Production Assistant Oberlin College Student Union Oberlin, OH, **2004**

- Monitor mixing, stage construction, spot-light operation, backline delivery/setup/return

Honors, Distinctions, Memberships:

2009: Drexel Research Day: Best Grad Presentation, Research in Education/Outreach

2009–12: Member, Institute of Electrical and Electronics Engineers (IEEE)

Research Publications and Presentations:

Publications

- Y. Kim et al. “*Teaching STEM (Science, Technology, Engineering & Math) concepts through music technology and DSP.*” Proceedings of the 14th IEEE Digital Signal Processing Workshop and 6th IEEE Signal Processing Education Workshop, Sedona, AZ. January 14, 2011.
- Richardson, Patrick and Kim, Youngmoo. “*Beyond Fun and Games: A Framework for Quantifying Music Skill Developments from Video Game Play.*” Journal of New Music Research, Vol. 40, iss. 4. November, 2011.
- Y. Kim et al. “*Music emotion recognition: A state of the art review.*” In Proceedings of the International Society for Music Information Retrieval (ISMIR) Conference, Utrecht, Netherlands, 9-13 August 2010 (authored section: “*Psychology Research on Emotion and Music*”).

Conferences Posters Presented

Music Video Games, Beyond Fun and Games. Society for Music Perception and Cognition (SMPC), IUPUI, Indianapolis, IN. 3-7 August, 2009. Evaluating the Impact of Music Video-Games of Music Skill Development. Drexel Research Day Symposium, Drexel University, Philadelphia, PA. 15 April, 2010.

Other Conferences Attended

- New Interfaces For Musical Expression (NIME, 2009). Carnegie Mellon University, Pittsburgh PA. 3-7 June, 2009.
- International Symposium Of Music Information Retrieval (ISMIR, 2008). Drexel University, Philadelphia, PA. 14-18 September, 2008. Conference facilitator and host.
- New Interfaces For Musical Expression (NIME, 2007). New York University, NY, NY. 6-10 June, 2007