

Patrick J. Richardson

(215) 620.7320

Email: thepatrickrichardson@gmail.com

Blog: thepatrickrichardson.wordpress.com



Curriculum Vitae

Education:

Masters of Science	in	Electrical Engineering	Drexel University	2010
Bachelors of Arts	in	Psychology	Oberlin College	2004

Teaching Employment

Temple University, Boyer Music Technology Department 2018-Present

Philadelphia, PA

Adjunct Faculty

- o *Sound Recording*: acoustics, microphones, DAWs, critical listening

Art Institute of Philadelphia 2011-2018

Philadelphia, PA

Faculty, Union Steward; Media Arts Department

Audio Production Department:

- o *Practical PsychoAcoustics*: sound perception and safety. **Course Author**
- o *Electronics 1 & 2*: audio circuit kits, repair, and theory
- o *Live Sound 1 & 2*: school PA design, venue studies, internships
- o *Listening/Analysis/Acoustics*: sound control, analytical listening, instrument research
- o *Independent Studies*: digital instrument design; Arduino, PureData, JavaScript, and MIDI

Game Art and Design Department:

- o *Programming for Artists*: OOP concepts in Unity & JavaScript
- o *Interactive Audio*: history and technique of game sound
- o *Interactive Storytelling*: game script-/UI-writing for non-linear media

Interactive Media/Web Design Department:

- o *Intro to Scripting* (HTML, CSS) & *Intermediate Scripting* (JavaScript)
- o *User-centered Design & Usability Testing* of user interfaces,

Drexel University, Digital Media Department 2015-Present

Philadelphia, PA

Adjunct Faculty

- o *Intro to Design, Vector Authoring*: PhotoShop, Illustrator, Flash
- o *Intro to Web Development*: Web portfolio design, branding, WordPress deployment

Colloquia, Workshops and Presentations:

Temple University

2019

- "[Tactile Transducers](#): the practicals and poetry of piezoelectric contacts mics and percussion sensors." Presented for the Music Technology Speaker series.

Art Institute of Philadelphia

2014, 2015

- Studio presentations/recording-sessions on drum trigger; electronic design to creative application, sponsored by Philadelphia Chapter of the *Audio Engineering Society*

Notable Student Projects Advised

- The [Mazij online DAW](#) a web-browser-based audio mixing / editing / collaboration tool by [Sultan Al Masoud](#) (AiPh % 2017)
- [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-aural recording prop; project-in-progress by [Andrea McKowski](#) (AiPh % 2015) at University of Colorado Media Forensics program.

Independent Workshops Taught

Philadelphia Hacktory

- Design / lead workshop on audio & MIDI processing in PureData 2017
- TA for course on the Arduino microcontroller platform 2015

Academic Course Advising

Students' Graduate Portfolio Advisor/Evaluator

2011-17

- Assisted 5 ~ 50 students / quarter with preparation and pre-evaluation critique. Topics included: analog circuit study, MIDI works, live concert technical documentation, business plan & budget, radio ad editing

Academic Institutional Support

Art Institute of Philadelphia

- Union Steward for Media Arts Department in Teachers Union 2015-17
- Researcher for task force on Middle States accreditation review 2016

Teaching Software Tools

- **Digital Audio Workstations**
 - Avid Pro Tools
 - Apple Logic Pro
 - Adobe Audition
- **Real Time Digital Signal Processing (DSP):**
 - PureData (~vanilla, ~extended, ~L2ork)
 - Processing
- **Physical Computing / MicroControllers:**
 - Arduino
 - RaspBerry Pi
- **Analytical Scripting, Data Analysis & Visualization:**
 - Matlab
 - Java
 - SPSS/PSAW
- **Authoring, Collaboration & Publishing:**
 - Adobe Creative Suite
 - LateX & BibTex
- **Software Languages:**
 - Python, C++, C
 - HTML5, CSS3, JavaScript
 - PHP/SQL, ActionScript

Focal Graduate Coursework

- Digital and Mechanical **User Interface (UI)** Design
- 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

Research, Outreach & Curriculum Development

Drexel University

2008-10

Philadelphia, PA

Research Assistant

- One-year [graduate research study](#) on music video-games with \$27k grant from National Association of Music Merchants (NAMM) Foundation
 - Coded custom self-calibrating pitch-detection algorithms to measure vocal performances under sub-optimal microphone technique.
 - Adapted battery of standard music skills tests (e.g. Gordon Musical Aptitude Profile) for deployment through a website or digital audio workstation (DAW).
 - Obtained appropriate IRB clearance to make audio recordings of humans as test subjects.
- Design / teach “science of audio” lesson plans in Drexel Summer Music Tech Program

Drexel Summer Music Technology (SMT) Program

2007-10

Instructor

- Design / teach “science-of-music” lessons to Philadelphia-Area high school students, using music software to present principles of physics, math, acoustics and sound design
- Design / advise individual projects in modeling real world echoic phenomena through graphically programmed audio/DSP environments (*PureData*)

Drexel Discovery K-12 (DK12) Project

2009-10

Researcher/Instructor

- Author and present special science/technology/mach focused lesson plans at Philadelphia’s Creative and Performing Arts Academy (CAPA)
- Observe student performance and learning with paper and web-data-based surveys
- Analyze survey data and created case reports for DK-12 program’s final reports

Research Publications and Presentations

Publications

- Kim Y, Batula A, Migneco R, **Richardson P**, Dolhansky B, Grunberg D, Morton B, Prockup M, Schmidt E, and Scott J. "[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, P** and Kim Y. "[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.
- Kim Y, Schmidt E, Migneco R, Morton B, **Richardson P**, Scott J, Speck J, and Turnbull, D. "[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.

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

Grants, Honors, Distinctions, Memberships

\$27k Research Grant from the NAMM Foundation for Music Video Game study 2008
Drexel Research Day: Best Grad Presentation, Research in Education/Outreach 2009
Member, Institute of Electrical and Electronics Engineers (IEEE) 2009-12

Select Musical Works

solo honoraria performances;

[“Repeater/Slow”](#) and [“Analog to Nausea”](#)

2017 Oberlin [“Talbertronics” retirement festival](#) for John Talbert
Custom analog light-sensing oscillators
sampling/looping of local and remote audio feeds

[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

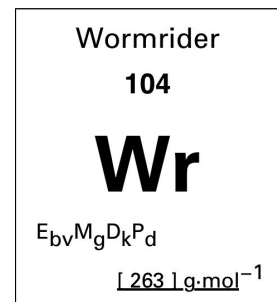
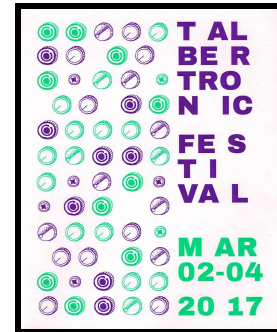
2006 [Kosmonaut](#)
drums, production assistance

2006 [go.see.girls.rock](#)
drums, production assistance

2006 [frequency of oscillation](#)
drums, production assistance

[selfTest](#)

2003 [by / for](#)
drums, vocals, sampling/sound design, instrument repair



Private Music Instruction

School of Rock

2018-Present

Philadelphia, PA

Instructor

- Private instruction and ensemble coaching in rock drumming, song analysis, and rhythm notation.

Private, In Home Studio, Drum Kit Instruction

2016-Present

Philadelphia, PA

- Private instruction for local community members (age 6+) in acoustic and electronic drums/percussion, song analysis, rudiments, ergonomics.

Concert Event Production

World Cafe Live

2006-7, '10-11

Philadelphia, PA

Production Assistant

- Sound reinforcement, mixing, staging, light-operation and light-design supporting concert video shoots for HD-TV and DVD (“Live at the World Cafe”) series, with live radio broadcast (88.5 FM WXPB)

UPenn Rotunda

2005-7

Philadelphia, PA

Production Assistant

- Sound Reinforcement, mixing, staging and light-operation for university-sponsored community-events; concerts, festivals, talent-shows, film showings and craft fairs.

Emergenza Competition

2005-6

Philadelphia, PA

Backline / Stage Technician

- preparation/delivery/maintenance/strike of sponsored backline equipment (Mapex, Sabian, Crate, Sennheiser) for timed musical performance competition of up to 10 bands/night, with documentation and recall of specific stage arrangements and instrument settings unique to each performer.

Oberlin College Student Union

2004

Oberlin, OH

Production Assistant

- Monitor mixing, stage construction, spot-light operation and backline delivery/setup/return for campus concerts and private events.