

# Shaun Wallace

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*INTERESTS:* My interests are centered on developing creative applications and solutions through dedicated research and human interaction. I care deeply about the pursuit of higher learning and collaboration to develop and enhance future ideas and technology.

## EDUCATION

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**Brown University** – Department of Computer Science (*Advisor Jeff Huang*)

*Doctoral Candidate - Current*

*Master's of Science in Computer Science – 2016*

### Achievements

- GPA – 3.88
- *Areas of Focus:* Human Computer Interaction, Crowdsourcing, Data Science, Personal Informatics, Interdisciplinary Scientific Visualization, Databases, Computational Linguistics, & Machine Learning
- Member of Human Computer Interaction Research Group at Brown Computer Science Dept.
- Current research efforts: Crowdsourcing, Data Science, Machine Learning, SciViz, & Personal Informatics
- Grad TA Fall 2017 - CS1300 User Interfaces and User Experience
- TA Fall 2016 - CS1300 User Interfaces and User Experience
- Develop AB Testing server for students using Node.js
- Advisor for Undergraduate Research Assistants & Graduate Student Mentor
- Presented talk at Microsoft NERD: Quantified Self on Personal Informatics in April 2015

### Research

#### **DRAFTY: Smarter Crowd Editing Platform**

Drafty is a platform that enlists visitors of an editable dataset to become "user-editors" to help solve this problem. It records and analyzes user-editors' within-page interactions (sorting, searching, highlight, click, hover) to construct user interest profiles, creating a cyclical feedback mechanism that enables Drafty to target requests for specific corrections from user-editors. Essentially, the platform enlists volunteers from its users to help review and keep the dataset up to date. This allows us to have large self-sustaining datasets even when the underlying information is constantly changing. This research combines the science of crowdsourcing with mining subtle forms of human-data interactions. This data analysis has been featured in magazine articles, presented to the NSF, and used by several Computer Science Departments around the country to inform hiring decisions.

#### **Visualizing Self-Tracked Mobile Sensor and Self-Reflection Data to Help Sleep Clinicians Infer Patterns**

CHI 2017 LBW

Wallace S., Sasson D., Guo H.

#### **Crowdsourcing for Data: Learning from Learners**

Human Computation Journal, *in review*

Wallace S., Papoustaki A., Guo H., Huang J.

#### **Drafty: Enlisting Users to be Editors who Maintain Structured Data**

HCOMP 2017, *in submission*

Wallace S., Huang J., Van Kleunen L., Aubin-Le Quere M.

**University of Limerick – College of Computer Science & Information Systems - 2009**  
*Masters of Science in Music Technology, 1<sup>st</sup> Class Honors*

**Achievements**

- Ranking 3<sup>rd</sup> in Class
- President's Letter for Academic Excellence
- Coursework: Audio Engineering, Algorithmic Music Composition, Ethnomusicology, Programming Protocols for Music Systems, Programming Music Systems, Computer Systems & Models in Music, Interactive Media in Public Spaces, Sound Synthesis and Manipulation, Research Methods & Practice, Acoustics & Psychoacoustics

**Research, Projects**

**THESIS PAPER: Real-time Audio Spectra Manipulation with Adaptive FM Synthesis**

Explores various synthesis methods through theoretical and practical methods. Built upon previous research by Lazzarini, Timoney, Lysaght, and Chowning. Thesis received the highest possible distinction of First Honors. The three major goals achieved through this research were: The creation of a real time implementation of the split sideband method of synthesis to allow the user to modify timbre in real time. To expand the split sideband method to allow the user the greatest control of timbre on both a macro and micro level. Lastly, to create novel performance and synthesis parameters to allow for an enhanced user experience. Spectralis was the custom built software used to generate, explore, and test these findings and theories.

**THESIS PROJECT: Spectralis (C, DSP, Max-MSP)**

Software for the manipulation of audio spectra and re-synthesis utilizing the split-sideband synthesis method. It is the first real-time example of Adaptive FM Synthesis. It is the companion project to the thesis. Spectralis allows the user to control and modify spectral content of traditional waveforms and looped audio samples. Contains custom algorithms to allow for multiples XY controls to enhance UX.

**RESEARCH: Genetic Algorithms (C, Max-MSP)**

Research state of the art genetic algorithms. Reviewed their individual strengths and weaknesses. Conducted iterative prototyping. Final prototype was a drum sequencer that covered several generations and mutations.

**RESEARCH PAPER: Review of Modern Synthesis Methods (DSP)**

Reviews state of the art synthesis methods of acoustic instruments and analog circuitry. Reviews their algorithms, applications, and history. Assesses applications and novel technologies. Recommends future hybrid applications.

**University of Rhode Island – College of Business - 2008**

*Bachelors of Science in Management Science & Information Systems, Summa Cum Laude*

**Achievements**

- GPA – 3.80 [*Ranking 2<sup>nd</sup> in Class*]
- Awarded Dean's List every semester
- Beta Gamma Sigma Honor Society
- Golden Key International Honor Society
- Coursework: Management, Business Policy, Software Development, Databases, Networking, Accounting, Finance, Economics, Statistics, Marketing, Operations & Supply Chain Management

**Research, Projects**

**PROJECT: Doctors Office Data Collection System (SQL)**

A yearlong group project, that involved creating a medical records system for a fictional doctor's office. The office was moving from a paper to electronic system. It involved data modeling and complex SQL queries. There was a strong emphasis on mock-ups and design of user interfaces. We also mapped and analyzed the office's business processes.

**INDEPENDENT RESEARCH STUDY: Japanese vs. Western Gaming Culture**

This study consisted of several goals. Analyze the history of different trends in video game industries. Analyze and report findings about how culture affects trends and preferences in human computer interaction and gaming. Propose solutions to enhance design and user experience of games to make them more accessible to both cultures.

## PROFESSIONAL EXPERIENCE

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### **Brown University** - Senior Application Developer

Mar 2011 - Current

*ICERM (Institute for Computational and Experimental Research in Mathematics)*

#### **Responsibilities**

- Manager of Development Team. [2 direct reports and several indirect reports]
- Lead role for design, development, testing of all applications and servers. [CentOS, Apache, nginx]
- Lead role for development & management of databases, data structures, restful services, & reporting systems.
- Manager and lead developer of central NSF Math Institutes web applications & data services.
- Assess, analyze, and improve business processes and workflows.
- Develop data analysis and business solutions following Agile and DevOps methodologies and best practices.

#### **Achievements, Projects Highlights**

##### **Cube** (JavaEE, Vaadin, Spring, Spring-Security, JPA, Wildfly)

A new centralized enterprise data management system. Cube is our main data collection and reporting system for research and professor data. It supports all departmental business functions. Integrates several functions of legacy applications and systems. Contributed to Vaadin open source integrations. User and role based security, actions, and views. Uses responsive design for mobile and tablets. Integrated analytics. System eliminates several departmental bottlenecks and creates a seamless user experience for staff and stakeholders.

##### **Qbert** (Java, JPA, Hibernate, MySQL, Wildfly)

Back-end enterprise level restful web service and database. Created new data models to match department's growing data reporting needs and business practices. Contains new database to satisfy all data reporting and collection needs. Custom security. Supports user configurable Java mail servers, with Google user account integration.

##### **NSF Joint Media Database System** (Wordpress, PHP, PostgreSQL, Restful)

A searchable media web repository for the National Science Foundation (NSF) Math Institutes. I serve as the Technical Lead. Plan and manage the agile development of the project based upon budget and grant proposal. Assess and communicate with contracted developers to ensure deliverables arrive on time and within budget.

##### **Hydra** (Python, AngularJS, Restful, PostgreSQL)

Custom built agile project management and collaboration tool. Allows users and managers to assess timelines and requirements based upon skills and related tasks. Auto-generates in-depth reports, charts, statistics related to project scope, health, and progress.

##### **DB Transfer** (PHP, MySQL, PostgreSQL)

Allows for staff to seamlessly validate, clean, and transfer data between legacy systems. Complex data validation performed on server with simple integrated front-end. Developed algorithms to systematically clean data.

##### **ICERM Website** (PHP, AngularJS, Javascript, MySQL) [Original version was Drupal]

Created department's website. Designed GUI, scripts, and add-ons to enhance user experience and boost productivity for site updates and maintenance. Website acts as a massive information portal with integrated search features and utilizes SEO best practices. Integrates technologies from several other in-house and external platforms for seamless updates and communication to our stakeholders.

### **University of Rhode Island** – Adjunct Professor

Current

*Department of Computer Science*

#### **Responsibilities**

- Design and develop new course in Visualization Methods in Data Science.
- Strong focus on integrating interdisciplinary research in medical field.
- Teach graduate/undergraduate level course focusing on data processing, feature engineering, & visualization.

## **RPS - Software Developer**

*Jul 2010 – Nov 2010*

### **Responsibilities**

- Design cutting edge web technologies used by governments and companies around the world.
- Develop reusable frameworks and tools for internal and external clients.
- Enhance UI and UX designs for legacy Flex components.

### **Achievements, Projects**

#### **Oil MapWeb** (Flex, Rest, ESRI ArcGIS, Google Maps)

Develop beta of Oil Map Web software. Upgraded alpha components and integrated new components and features of ArcGIS with Flex. Collaborated with developers to modify generated data points and Restful framework for new mapping types. Enhanced front-end code running time by more than 90%. Rewrote part of ArcGIS framework to allow for cross-talk communications between various embedded Flex components and widgets.

#### **Woods Hole Interactive Inundation Software** (Flex, Javascript, Google Earth)

Collaborate with Biologists to create interactive Inundation kiosk for Woods Hole, MA. Utilizes Google Earth to allow for users to interactively assess flood levels in town based upon various weather conditions.

#### **Time Slider** (Flex, ArcGIS)

Upgraded widely used Time Slider widget. Completely redid UI and enhanced UX. Added new features to enhance UX with new components for ArcGIS and ESRI Mapping. Time Slider is used in various projects company wide.

## **University of Rhode Island - Web Developer**

*Jan 2010 – Jul 2010*

### *Division of Student Affairs - Vice President's Office*

#### **Responsibilities**

- Work with 23 departments to develop new websites and improve UI, UX functions.
- Plan, coordinate, and manage website features and future maintenance.
- Assist URI CSPD with IT needs and management of students.

#### **Achievements, Projects**

##### **Technology & Communications Committee**

Consists of 18 stakeholders from around the University. Committee is in charge of research and decisions regarding the future use and implementation of technology to increase student retention. I was an initial member. I was also part of 3-person sub-committee personally responsible for research and proposals to the rest of the committee.

##### **Websites Development** (PHP, JavaScript)

Worked with over 23 different departments to assess and re-develop websites and services. Integrated new UX features with easy-to-maintain JavaScript plugins. Worked with long-term employees to create long-term solutions.

## **University of Rhode Island - Web Developer & Event Coordinator**

*May 2005 – Dec 2009*

### *Conferences & Special Program Development (Division of Student Affairs)*

#### **Responsibilities**

- Manage & develop over 30 conference registration systems, data, and websites per year.
- Plan, coordinate, and manage over 30 small and large scale events per year.
- Budget finances and prepare contracts and timelines for events.
- Serve as first point of contact between potential clients and University.

#### **Achievements, Projects**

##### **Request for Proposal System** (Web-Based, HTML)

Serves as initial point of contact for potential clients. Starts the data collection process to assess their needs and begin to plan our proposal for their event.

##### **Websites Development** (HTML, JavaScript)

Created over 200 online registration sites. Worked with individual clients to create complex sites to match each of their data collection and marketing needs. Data was integrated into annual and semi-annual reports to the Presidents and Vice-Presidents of the University. Each site also served as an information portal for attendees and registrants.