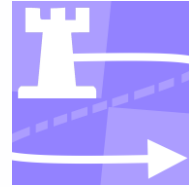


# Drew Hicks

e: [drew.g.hicks@gmail.com](mailto:drew.g.hicks@gmail.com)  
p: (304) 210-1440  
t: @EvenWeirderMove



**Objective** To build **games that learn from their players** by **visualizing and analyzing data**, and to use those insights to **build better, smarter games**. I am fascinated by the possibilities of **user-generated content**, adaptive content via **user modeling**, and **analyzing networks of player interactions** within game environments and communities.

|                              |   |   |   |
|------------------------------|---|---|---|
| <b>Skills and Experience</b> | <b>Programming</b><br>SQL, R, Python, C#, JavaScript, Java, C++, PHP, Objective C, HTML5              | <b>Visualization + Analysis</b><br>Tableau, ProtoVis, RStudio, SPSS, MATLAB, Network/Graph Analysis, Statistical Analysis | <b>User Research</b><br>A/B Testing, Research Design, Quantitative Methods, IRB Protocol, Think-Aloud Protocol  |
|                              | <b>Development Tools</b><br>Visual Studio, SVN, Git, Unity3D, MonoDevelop, Eclipse, Kinect SDK, xCode | <b>Machine Learning</b><br>Clustering and Classification Algorithms, WEKA, Knowledge Discovery, User Modeling             | <b>Game Design</b><br>Rapid Prototyping, Analog and Digital Game Design, Playtest Coordination, Data Collection |

## Selected Projects

### **BOTS - Project Lead, Research Lead** [BOTS.GAME2LEARN.COM](http://BOTS.GAME2LEARN.COM)

I led a team of 5 to build a programming puzzle game using **Unity3D**, **JavaScript**, **PHP**, and **MySQL**. I developed an **adaptive level selection algorithm** based on **content models** developed through **unsupervised learning**, and **user models** derived from **Bayesian Knowledge Tracing**. I designed and implemented gamified **level editors**, and evaluated these tools' impact on gameplay affordances within **user-authored puzzles** using **R** and **Tableau**.

### **SNAG'EM - Researcher, Game Designer** [WWW.SNAGEMGAME.COM](http://WWW.SNAGEMGAME.COM)

I designed a **social networking game** for academic conferences and universities (**ACM SIGCHI Conference**, **STARS Celebration**, **Spellman University**, **UNC Charlotte**). I built network visualizations and admin dashboards using **HTML5** and **ProtoVis**, used **network clustering** to identify "hub" players with high social value, and evaluate these players' impact on overall **user behavior**.

### **Cedars in the Pines - Project Lead** [NCLEBANESE.WORDPRESS.COM/PROJECTS](http://NCLEBANESE.WORDPRESS.COM/PROJECTS)

I worked with the **Moise A. Khayrallah Center for Lebanese Diaspora Studies** and the **Levine Museum of the New South** to develop a **Kinect** rhythm game for the "Cedars in the Pines" museum exhibit. I supervised a team of 3, **organized and conducted playtests**, and reworked in-game scoring and **gesture recognition** based on insights from **user surveys and gameplay data**.

### **Quantum Spectre - Data Scientist** [EDGEATTERC.COM/EDGE/GAMES/QUANTUM-SPECTRE](http://EDGEATTERC.COM/EDGE/GAMES/QUANTUM-SPECTRE)

I developed and analyzed **data visualizations** of player behavior within an educational puzzle game using **R**, **yEd Graph Editor**, and **Tableau**. I used graph analysis techniques on networks of player interactions to **discover** and **cluster** similar player strategies, and developed **dashboards and graph visualizations** to help developers **navigate data** and **identify problem areas** where players struggled.

### **Discovery Detectives - Game Designer, Developer**

I worked with **Discovery Place Science Museum** in Charlotte, NC to develop a "digital layer" **game** to increase interest in and direct traffic to exhibits which lacked interactive elements. I conducted **on-site playtesting** and made improvements based on **user surveys** and **gameplay data**.

### **eleMental: the Recurrence - Level Designer, Developer**

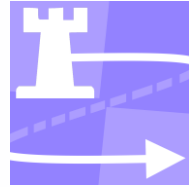
I designed a game in a custom engine written in **C++** to **teach graph search algorithms** by allowing the user to explore a graph structure in 3D space. I **conducted and published research** on the efficacy of this game at **teaching** the target concepts.

# Drew Hicks

e: drew.g.hicks@gmail.com

p: (304) 210-1440

t: @EvenWeirderMove



## Awards and Honors

- National Science Foundation Graduate Research Fellow (\$42,000 ANNUALLY, 2011-2014)
- Graduate Assistantships in Areas of National Need – Fellow (\$20,000 ANNUALLY, 2009-2011)
- Pittsburgh Science and Learning Center - LearnLab Graduate (SUMMER 2010)
- Invited Lecturer - HAEF Program, Athens College, Greece (SUMMER 2012)
- Invited Speaker - Intercultural Outreach Programs, UNC Charlotte (MARCH 2012)
- Invited Speaker – Global Game Jam @ NCSU (JANUARY 2014)
- Event Coordinator - Global Game Jam @ NCSU (JANUARY 2015)

## Academic History

### Ph.D. in Computer Science - NC State University (August 2012 - present)

**Highlights:** Designed and evaluated gamified level creation tools to improve the quality of user-authored levels. Mentored award-winning NSF-funded undergraduate research teams. Developed a system for constructing hint messages for unseen levels based on previous player behavior. Designed a system for collecting and filtering peer-authored instructions.

**Awards + Service:** Selected for the Graduate Research Fellowship sponsored by the National Science Foundation. Conducted outreach through STARS Alliance and SPARCS. Presented lectures and developed course materials for game design courses.

### M.S. in Computer Science - UNC Charlotte (August 2009 - April 2012)

**Highlights:** Built Serious Games for clients including Discovery Place, Spellman College, and Duke Energy. Studied Data Visualization, Machine Learning, Cognitive Science, and Research Methods.

**Awards + Service:** Selected for the GAANN Fellowship. Conducted middle-school outreach through STARS Alliance. Developed lectures for Discrete Mathematics and Principles of Computer Science.

### B.S. in Computer Science - Marietta College (August 2005 - April 2009)

**Highlights:** Developed a database system for the Sports Medicine department. Led the ACM Programming Contest team. Held leadership roles in ACM, Honors House, and Rainbow Alliance.

## Selected Publications

- **Drew Hicks**, Veronica Catete, Rui Zhi, Yihuan Dong, and Tiffany Barnes. 2015. "Applying Deep Gamification Principles to Improve Quality of User-Designed Levels." In Proceedings of the eleventh annual conference on Games+Learning+Society (GLS '15).
- Michael Eagle, **Drew Hicks**, Barry Peddycord III and Tiffany Barnes. 2015. "Exploring Networks of Problem-Solving Interactions." In Proceedings of the Fifth International Conference on Learning Analytics And Knowledge (LAK '15).
- **Drew Hicks**, Barry Peddycord III, Tiffany Barnes. 2014. "Building Games To Learn From Their Players: Generating Hints In A Serious Game." In Proceedings of the International Conference on Intelligent Tutoring Systems (ITS '14).
- **(BEST PAPER NOMINEE) Drew Hicks**, Veronica Catete, Tiffany Barnes. 2014. "Part Of The Game: Changing Level Creation to Identify and Filter Low-Quality User Generated Levels." In Proceedings of the International Conference on the Foundations of Digital Games (FDG '14).
- **Drew Hicks**. 2012. "Creation, evaluation, and presentation of user-generated content in community game-based tutors." In Proceedings of the International Conference on the Foundations of Digital Games (FDG '12).
- Samantha L. Finkelstein, Eve Powell, **Drew Hicks**, Katelyn Doran, Sandhya Rani Charugulla, and Tiffany Barnes. 2010. "SNAG: using social networking games to increase student retention in computer science." In Proceedings of Innovation and technology in computer science education (ITICSE '10).