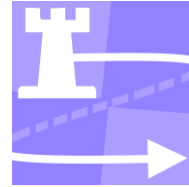


Drew Hicks

e: 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.

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

Selected Projects

BOTS - Project Lead, Research Lead 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

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

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

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

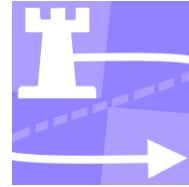
I designed a game in a custom engine written in **C++** to **teach graph search algorithms** by allowing the user to explore a graph structure in 3D space. I **conducted and published research** on the efficacy of this game at **teaching** the target concepts.

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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).