

Mark Floryan

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University of Virginia
Department of Computer Science
85 Engineer's Way
Charlottesville, VA 22903

Education

University of Massachusetts: Amherst, MA

Fall 2008 – Spring 2013

M.S. / Ph.D. Computer Science

Ph.D. Advisor: Dr. Beverly Park Woolf

University of Virginia: Charlottesville, VA

Fall 2004 – Spring 2008

B.S. Computer Science

Appointments

Associate Professor; Computer Science

University of Virginia; Charlottesville, VA

August 2013 – present

Assistant Professor; Computer Science

University of Virginia; Charlottesville, VA

August 2013 – July 2021

HitPoint Studios, Inc.

Lead Game Developer

March 2012 – August 2013

Lab Instructor; Computer Science

Mount Holyoke College; South Hadley, MA

August 2011 – May 2012

Active Research Projects

Advanced Collegiate Assessment System (ACAS)

University of Virginia

This project aims to develop tools for scaling large courses, providing advanced assessments using graphical modeling of course content, and automatically generating feedback for student study as well as instructional design.

May 2018 – present

Gamification of Internet Interventions

Game Design Research Group & Center for Behavioral Health Technology

This project involves the gamification of two active online internet interventions. One is an insomnia program for adults, the other a skin cancer prevention program.

April 2016 – present

Gamer Card: Gamification Platform for Education

Game Design Research Group; University of Virginia

Gamer Card is a platform for XP/gamification in a course setting. The system provides a domain-independent, out-of-box solution for teachers who wish to easily apply gamification to courses.

August 2014 – present

Past / On-Hold Research Projects

Gamifying the Process of Energy Saving

Game Design Research Group; University of Virginia

August 2015 – present

Bookmark: Critical Reading Game

Game Design Research Group; University of Virginia

August 2015 – present

Emergence: A Serious Game for Medical Diagnosis

University of Virginia

May 2014 – present

Evolving Expert Knowledge Bases

University of Massachusetts, Amherst / University of Virginia

August 2012 – Present

Dr. Doctor: A Knowledge Refinement Game

University of Virginia / University of Massachusetts, Amherst

August 2012 – present

Rashi: Collaborative Tutoring in Ill-Defined Domains University of Massachusetts, Amherst / University of Virginia	January 2011 – Present
CIRCE: An Electronic Circuit Analysis Tutor University of Massachusetts, Amherst	January 2011 – August 2013
Examining Educational Benefits of Intelligent Interactive 3D Games University of Massachusetts, Amherst	January 2010 – present
4Mality: Intelligent Tutoring for Fourth Grade Standardized Math Tests University of Massachusetts, Amherst	June 2010 – November 2010
Nancy's Pantry: User Interfaces for the Blind University of Virginia	May 2007 - May 2008

Publications

- Mark Floryan**, Zachary Bilmen*. "Waypoints: Pilot Study of a Flexible, Scalable College Assessment Model". (In Preparation).
- Jim Bywater, **Mark Floryan**, Jennifer Chiu. "DiSCS: A New Sequence Segmentation Method for Open-Ended Learning Environments". 22nd International Conference on Artificial Intelligence in Education. Utrecht, The Netherlands (2021).
- Mark Floryan**, Philip I. Chow, Lee M. Ritterband, Stephen Schueller. "The Model of Gamification Principles for Digital Health Interventions: Evaluation of Validity and Potential Utility". Journal of Medical Internet Research 22.6. <https://doi.org/10.2196/16506> (2020). E16506
- Upsorn Praphamontripong, **Mark Floryan**, Ryan Ritzo*. "A Preliminary Report on Hands-On and Cross-Course Activities in a College Software Testing Course". 1st International Software Testing Education Workshop. Porto, Portugal (2020).
- Mark Floryan**, Lee M Ritterband, Philip I Chow. "Principles of gamification for Internet interventions". Translational Behavioral Medicine, *ibz041*. <https://doi.org/10.1093/tbm/ibz041> (2019).
- Nicholas Lytle, **Mark Floryan**, Tiffany Barnes. "Effects of a Pathfinding Program Visualization on Algorithm Development". ACM Special Interest Group on Computer Science Education (SIGCSE). Minneapolis, MN (2019).
- Jim Bywater**, **Mark Floryan**, Jennifer Chiu, Jie Chao, Charles Xie, Camilo Viera, Alejandra Magana. "Using Machine Learning Techniques to Capture Engineering Design Behaviors and Practices". 13th International Conference of the Learning Sciences (ICLS). London, England (2018).
- Nicholas Lytle*, **Mark Floryan**, David Amin*. "Experience, Experiment, Evaluate: A Framework for Assessing Experiential Games". International Journal of Serious Games 4.1 (2017): 15-30.
- Toby Dragon, **Mark Floryan**, Grayson Wilkins*, Thomas Sparks*. "Efficiency vs. Immersion: Design Trade-offs for an Exploratory Learning Environment". ITS Workshop on Exploratory Learning Environments. Zagreb, Croatia (2016).
- Mark Sherriff, **Mark Floryan**, David Wert*. "Achievement Unlocked: Investigating Which Gamification Elements Motivate Students". 123rd Annual ASEE Conference and Exposition. New Orleans, LA (2015).
- Nicholas Lytle*, **Mark Floryan**. "A Design Framework for Experiential Educational Games". Proceedings of the Games and Learning Alliance (GALA) Conference. Rome, Italy (2015).
- Mark Floryan**, Toby Dragon, Nada Basit, Suellen Dragon, Beverly Park Woolf. "Who Needs Help? Automating Student Assessment within Exploratory Learning Environments". Proceedings of the 17th International Conference on Artificial Intelligence in Education. Madrid, Spain (2015).
- Enid K. Sichel, Beverly Park Woolf, **Mark Floryan**. "Web-based Personalized Laboratories for Engineering Students". Proceedings of the 2014 Zone 1 Conference of the American Society for Engineering Education. Bridgeport, CT (2014). *Nominated for Best Paper Award

Enid K. Sichel, Beverly Park Woolf, **Mark Floryan**. "Personalized Intelligent Software Responses for Engineering Students". Proceedings of the 2014 IEEE-USA Annual Meeting and Innovations in Technology Conference. Providence, RI (2014).

Beverly Park Woolf, Winslow Bureson, Bradley Henry, **Mark Floryan**, Avron Barr. "White House Pull Mechanisms for Education". United States Office of Science and Technology Policy; Request for Information: Advancing Learning Technology through Pull Mechanisms. (2014).

Mark Floryan, Beverly Woolf. "Improving the Efficiency of Automatic Knowledge Generation through Games and Simulations". Proceedings of the 16th International Conference on Artificial Intelligence in Education. Memphis, TN (2013).

Mark Floryan, Beverly Woolf. "Authoring Expert Knowledge Bases for Intelligent Tutors through Crowdsourcing". Proceedings of the 16th International Conference on Artificial Intelligence in Education. Memphis, TN (2013). ***Best Poster Award Winner**

Mark Floryan. "Evolving Expert Knowledge Bases: Applications of Crowdsourcing and Serious Gaming to Advance Knowledge Development for Intelligent Tutoring Systems". Ph.D. Dissertation. University of Massachusetts, Amherst (2013).

Mark Floryan, Toby Dragon, Beverly Woolf. "When Less is More: Focused Pruning of Knowledge Bases to Improve Recognition of Student Conversation". Proceedings of the 11th International Conference on Intelligent Tutoring Systems. Chania, Crete (2012).

Mark Floryan, Beverly Woolf. "Students that Benefit from Educational 3D Games". Proceedings of the IEEE International Conference on Advanced Learning Technologies. Athens, GA (2011).

Mark Floryan, Beverly Woolf. "Optimizing the Performance of Educational Web Services". Proceedings of the IEEE International Conference on Advanced Learning Technologies. Athens, GA (2011).

Mark Floryan, Beverly Woolf. "Rashi Game: Towards an Effective Educational 3D Gaming Experience". Proceedings of the IEEE International Conference on Advanced Learning Technologies. Athens, GA (2011).

Toby Dragon, **Mark Floryan**, Beverly Woolf, Tom Murray. "Recognizing Dialogue Content in Student Collaborative Conversation". Proceedings of the International Conference on Intelligent Tutoring Systems. Pittsburgh, PA (2010).

Mark Floryan, Beverly Woolf, Toby Dragon, Tom Murray. "Interactive Event: Collaboration and Content Recognition Features in an Inquiry Tutor". Proceedings of the International Conference on Intelligent Tutoring Systems. Pittsburgh, PA (2010).

Mark Floryan, Beverly Woolf, Rick Adrion. "Web Services and Serious Games: The Applications of Web Based Software Engineering Techniques for the Purpose of Developing Game Based Intelligent Tutoring Systems." (2010).

Mark Floryan, Beverly Woolf. "A Literature Review of the Field of Serious Games." (2009).

Mark Floryan. "Consolidating and Deriving HCI Techniques for Non-Visual User Interfaces". Honors Thesis. University of Virginia, University Press (2008).

* Indicates undergraduate student author at the time of writing ** Indicates graduate student author

Talks

Mark Floryan, Lee Ritterband. "Towards Improved Application of Gamification for Internet Interventions". 9th Scientific Meeting. International Society for Research on Internet Interventions (ISRII). Berlin, Germany. October 12-14, 2017.

Mark Floryan "Leveraging Computing to Provide Increased Efficacy for Educational Interventions" University of Virginia; Center for Behavioral Health Technology Seminar. April 15, 2016.

Mark Floryan "Video games and their applications to both teaching and learning." University of Virginia; Student Game Developers Invited Talk. October 10, 2013.

Mark Floryan "Automatic construction of knowledge bases from student data, and how gaming can affect this process". McGill University. July 30, 2013.

Mark Floryan "How can video games help humans and computers learn from one another?" Mount Holyoke College. April 17, 2013.

Mark Floryan "Life as a graduate student: What to expect." Mount Holyoke College. October 11, 2011.

Grant Proposals

- Data Structures, Processing, and Analysis: A New CS Course for Non-Majors:** *July 2017*
Thomas Horton, Mark Floryan
UVa Educational Innovation Award
Amount: ~\$80,000
Status: *Awarded*
- Artificial Instructional Designers:
Towards Automation of the Course Development Lifecycle** *December 2015*
Mark Floryan, Beverly Park Woolf, Toby Dragon
National Science Foundation EXP Cyberlearning
Amount: \$550,000
Status: *Rejected*
- Time Traveler: Learning Science and Engineering through Educational Games** *February 2011*
Beverly Park Woolf, Alan Lukas, Mark Floryan
National Science Foundation STTR Proposal
Amount: \$150,000
Status: *Rejected*
- Improving Educational Fluency by Expanding Access to Automatic Reading Technologies** *October 2013*
Mark Floryan, Maryam Ghariban, Hollis Cate, Vignesh Kuppusamy
Hereford Scholars Independent Project Grants
Amount: \$2000
Status: *Awarded*

Teaching

- University of Virginia** *August 2013 – Present*
- CS 1501: Neural Networks in Application **Advisor of Student Taught Class*
 - CS 1501: Cracking the Coding Interview **Advisor of Student Taught Class*
 - CS 2150: Program and Data Representation
 - CS 2190: Computer Science Seminar
 - CS 2501: Data Structures and Algorithms I (New Curriculum Pilot Course)
 - CS 2501: Data Structures and Algorithms II (New Curriculum Pilot Course)
 - CS 2501: Introduction to Game Design
 - CS 3205: HCI in Software Development
 - CS 4102: Algorithms
 - CS 4710: Artificial Intelligence
 - CS 4730: Computer Game Design
- Mount Holyoke College** *August 2011 – May 2012*
- CS 101: Introduction to Computer Science
 - CS 201: Introduction to Software Engineering
- University of Massachusetts, Amherst (Teaching Assistant)** *August 2008 – December 2010*
- CS 121: Introduction to Solving Problems with Computers
 - Java Enrichment Laboratory (Founder)
- University of Virginia (Teaching Assistant)** *January 2006 – December 2007*
- CS 202: *Discrete Mathematics*
 - CS 216: *Data Structures*

Advising

Advanced Modeling of Mastery of College Quizzes Senior Thesis Project Carrington Murphy	<i>August 2019 – May 2020</i>
A C++ Based 3D Game Engine for College Courses Senior Thesis Project Andrew Niedringhaus	<i>August 2019 – May 2020</i>
Game Engine Special Effects in Javascript Senior Thesis Project Kasey Price	<i>August 2018 – May 2019</i>
A Web-Based Tool for Rapid Game Engine Development Pedagogy Senior Thesis Project Laura Maimon	<i>August 2018 – May 2019</i>
Studying the use of Virtual Reality for Promoting Positive Social Behaviors Distinguished Majors Program; Capstone Project Zachary Danz	<i>August 2017 – May 2018</i>
Modeling Student Competency During CS Topics Practice Distinguished Majors Program; Capstone Project Rachel Pehrsson	<i>August 2017 – May 2018</i>
Studying Competitive Features in a Gamified College Course Senior Thesis Project Joseph Baik; University of Virginia	<i>August 2016 – May 2017</i>
Use of Virtual Reality for History Education Senior Thesis Project Anthony Uitz; University of Virginia	<i>August 2016 – May 2017</i>
Gamifying an Insomnia Intervention for Older Adults Senior Thesis Project Cindy Park, Alyssa Lambert; University of Virginia	<i>August 2016 – May 2017</i>
Developing Algorithms for Graph Combinations with Noisy Data Senior Thesis Project Ryan Duffin; University of Virginia	<i>August 2015 – May 2016</i>
Prediction Algorithms for Forecasting NCAA Tournament Games Independent Study Project Max Reinsel; University of Virginia	<i>August 2015 – May 2016</i>
Leveraging Social Game Mechanics to Enhance Mathematics Literacy Senior Thesis Project Courtney Maimon, Kevin Whelan; University of Virginia	<i>August 2014 – May 2015</i>
The Dark Side of HCI; Analyzing Optimal Designs of Pirate Sites Distinguished Majors Program; Capstone Project Kevin Liu; University of Virginia	<i>August 2014 – May 2015</i>
Machine Learning Algorithms for Categorizing User BAC Levels Senior Thesis Project Kyle Thornburgh, Praneeth Nadipalli, Sumit Narain; University of Virginia	<i>August 2014 – May 2015</i>
Efficient Generation of a Medical Knowledge Base Senior Thesis Project Samuel Ogbe; University of Virginia	<i>August 2013 – May 2014</i>
Decision Tree Modeling for ITS from Teacher Provided Data Senior Thesis Project Xinzhuo Dong; University of Virginia	<i>August 2013 – May 2014</i>

Improved Designs for Knowledge Refinement Games Senior Thesis Project Tim Hammer; University of Virginia	<i>August 2013 – May 2014</i>
Designing Games to Teach Domain Knowledge to Machines Senior Thesis Project Jared Baum; University of Virginia	<i>August 2013 – May 2014</i>
The Addition of Haptic Feedback to LEAP Motion to Advance Desktop Interactions Independent Research Project Andy Barron, Justin Dao, Elizabeth Orrico, Alexander Kuck; University of Virginia	<i>August 2013 – May 2014</i>
Automatic Grading Framework for Tutors in Ill-Defined Domains Independent Research Project Vishesh Choudhry; University of Virginia	<i>August 2013 – May 2014</i>
CollegiateLoL: A Web-Based Collegiate E-Sports Management System Independent Project Garet Voit; University of Virginia	<i>August 2013 – May 2014</i>
Circe: Introductory Circuit Analysis Tutor Spiros Baltasvias; University of Massachusetts, Amherst	<i>August 2012 – May 2013</i>

Professional Affiliations

Member: Association of Computing Machinery (ACM)	<i>May 2016 – Present</i>
Member: International Society for Research on Internet Interventions (ISRII)	<i>October 2017 – Present</i>
Member: Serious Games Society (SGS)	<i>March 2016 – Present</i>
Member: Special Interest Group, Computer Science Education (SIGCSE)	<i>February 2014 – Present</i>
Member of the International Artificial Intelligence in Education Society (AIED)	<i>June 2013 – Present</i>

Service / Leadership

Student Volunteer Co-Chair: Special Interest Group on CS Education (SIGCSE) <i>Association of Computing Machinery (ACM)</i>	<i>2019 - Present</i>
SEAS Undergraduate Curriculum Committee <i>University of Virginia; School of Engineering and Applied Science</i>	<i>2018 - Present</i>
Faculty Advisor: Alpha Phi Omega (APO) <i>University of Virginia</i>	<i>2018 - Present</i>
Academic General Faculty (AGF) Search Committee <i>University of Virginia; Department of Computer Science</i>	<i>2018 - 2019</i>
Program Committee: Special Interest Group on CS Education (SIGCSE) <i>Association of Computing Machinery (ACM)</i>	<i>2018 - 2019</i>
Data Structures and Analysis (DSA) I Sub-Committee (Chair) <i>University of Virginia; Department of Computer Science</i>	<i>2018 - 2019</i>
Member: Jefferson Scholars Foundation Selection Committee <i>University of Virginia; Jefferson Scholars Foundation</i>	<i>March 2018</i>
Program Committee: 14th International Conference on Intelligent Tutoring Systems (ITS) <i>Montreal, Canada</i>	<i>July 2018</i>

Reviewer: International Journal of Serious Games (IJSG)	<i>August 2016 - Present</i>
ACM Student Chapter Faculty Advisor <i>University of Virginia</i>	<i>August 2016 - Present</i>
ACM Inter-Collegiate Programming Contest World Finals <i>Co-Coach; University of Virginia</i> <i>Contest held at Prince of Songkla University; Phuket, Thailand</i>	<i>June 2016</i>
Program Committee: 13th International Conference on Intelligent Tutoring Systems (ITS) <i>Zagreb, Croatia</i>	<i>July 2016</i>
Program Committee: 6th International Workshop on Intelligent Support for Exploratory Learning Environments <i>Madrid, Spain</i>	<i>July 2015</i>
ACM Inter-Collegiate Programming Contest <i>Co-Coach; University of Virginia</i>	<i>August 2014 – Present</i>
ACM Inter-Collegiate Programming Contest World Finals <i>On-Site Coach; University of Virginia</i> <i>Contest held at Ural Federal University; Yekaterinburg, Russian Federation</i>	<i>June 2014</i>
Undergraduate Curriculum Committee (UGCC) <i>University of Virginia; School of Engineering and Applied Sciences (SEAS)</i>	<i>August 2014 – Present</i>
Program Committee: 17th International Conference on Artificial Intelligence in Education (AIED) <i>Madrid, Spain</i>	<i>July 2015</i>
Program Committee: 12th International Conference on Intelligent Tutoring Systems (ITS) <i>University of Hawaii at Manoa; Honolulu, HI</i>	<i>July 2014</i>
Program Committee: 16th International Conference on Artificial Intelligence in Education (AIED) <i>University of Memphis; Memphis, TN</i>	<i>July 2013</i>
Program Committee: Workshop on Intelligent Support for Exploratory Learning Environments <i>Chania, Crete; Greece</i>	<i>July 2012</i>
Program Committee: 11th International Conference on Intelligent Tutoring Systems (ITS) <i>Chania, Crete; Greece</i>	<i>July 2012</i>
Volunteer: 10th International Conference on Intelligent Tutoring Systems (ITS) <i>Carnegie Mellon University; Pittsburgh, PA</i>	<i>June 2010</i>
New Student Committee; Social Committee; Message Meister <i>University of Massachusetts, Amherst</i>	<i>2008 - 2010</i>

Awards

Hartfield Jefferson Scholars Teaching Prize <i>University of Virginia; https://www.jeffersonscholars.org/faculty-fellows</i>	<i>2016-2017</i>
ACM Professor of the Year Award <i>University of Virginia</i>	<i>2013 - 2014</i>
Best Paper Award (Nominated) <i>Zone 1 Conference of the American Society for Engineering Education. Bridgeport, CT</i>	<i>May 2014</i>
Best Poster Award <i>16th International Conference on Artificial Intelligence in Education. Memphis, TN</i>	<i>July 2013</i>

Game Development Experience

Fablewood**

A fantasy-based, social, hidden object game
HitPoint Studios Inc.
(<https://goo.gl/3YM3T6>)

Release: November 2013

Disney Fairies: Hidden Treasures*

Story based adventure featuring Disney's *Tinker Bell*
HitPoint Studios Inc., Microsoft Game Studios, Disney Interactive Studios

Release: March 2013

Adera

Story / puzzle based adventure game
HitPoint Studios Inc., Microsoft Game Studios, Disney Interactive Studios
(<https://goo.gl/zqfHfo>)

Release: October 2012

Seaside Hideaway**

A seaside town based, social, hidden object game
HitPoint Studios Inc.
(<https://apps.facebook.com/seasidehideaway/>)

Release: May 2012

A Light in the Dark**

Hide and seek game utilizing facial recognition technology
Independent: Mount Holyoke College Global Game Jam

Release: January 2012

Fruit Simon*

A memory game utilizing physical motion based interaction
Independent: Mount Holyoke College Global Game Jam

Release: January 2012

Rashi Game**

A 3-D medical diagnosis and inquiry based game
University of Massachusetts Amherst; Center for Knowledge Communication

Release: October 2011

*** Indicates lead role of given project*

** Indicates significant (non-lead) contribution to project*