John Wenskovitch

Graduate Student and Adjunct Professor

Department of Computer Science
Virginia Tech, Blacksburg, VA 24060
+1 724-594-3375
johnwenskovitch@gmail.com
http://www.johnwenskovitch.com

Research Overview

My research efforts lie at the intersection of **information visualization** and **human-computer interaction**, along with a bit of **machine learning**. These **semantic interaction** techniques for **Human in the Loop** user interfaces permit analysts to interact with complex **mathematical** models via natural interactions with the data. Some other research endeavors include **scientific visualization** in the **astronomy** domain, **social media** studies in the **health care** domain, and creating **electronic art**.

Education

2011–2019 Ph.D. in Computer Science, Virginia Polytechnic Institute and State University, Advisor: Dr. Chris North, (at Virginia Tech 2016-2019), at the University of Pittsburgh 2011-2014 advised by Dr. G. Elisabeta Marai)
(Tentative) Title: *Combining Dimension Reduction and Clustering Algorithms for Interactive Exploratory Data Analysis*

2009–2011 M.S. in Computer Science, University of Pittsburgh, Advisor: Dr. Jingtao Wang
Exploring the Use of Rotational Input and Gyroscopes in Smartphones

2005–2009 B.S. in Software Engineering (Mathematics Minor and Multimedia Application Domain), Gannon University, Advisor: Dr. Mei-Huei Tang
Rosetta Fist: An Interactive Sign Language Tutoring Tool using the Nintendo WiiMote

Current Positions

2017– Adjunct Instructor, Department of Computer Science, Virginia Tech
- I began teaching courses for the Department of Computer Science in the Fall 2017 semester.
- My classes have ranged in size from 90–540 students. I created and graded labs, exams, and quizzes, and presented lectures to students who received their first exposure to C, x86, and Python.

2016– Graduate Research Assistant, Department of Computer Science, Virginia Tech
- Advised by Dr. Chris North, I work in the Discovery Analytics Center investigating semantic interactions in dimension-reduced projections.
- In particular, my research focuses on the systematic combination of dimension reduction and clustering algorithms in high-dimensional data for interactive exploratory data analysis.
- I supported other research endeavors of the group, and assisted in writing funding proposals.

Previous Positions

Academia

2014–2017 Visiting Assistant Professor, Department of Computer Science, Allegheny College [Visiting Assistant Professor (2014-2016), Adjunct Professor (2016-2017)]
- I began a Visiting Assistant Professor position at Allegheny College in the Fall 2014 semester, where I taught five courses (a total of ten individual classes, nine with labs) across six semesters.
- I also ran Independent Study courses on Big Data, video game design, and advanced graphics, and was responsible for advising a number of undergraduate students as well as assisting in departmental administrative tasks and events.
- My classes in the adjunct role were almost entirely online, a new initiative for Allegheny College.

2013–2012

Adjunct Professor, Department of Mathematics, Chatham University

- I taught four different mathematics courses (six individual classes) at Chatham University in the Department of Mathematics.
- I also taught one instance of my Elementary Statistics course as an online course.

2014–2010

Teaching Assistant, Department of Computer Science, University of Pittsburgh

- I was a Teaching Assistant for ten different courses (eighteen individual classes) at the University of Pittsburgh in the Computer Science Department.

2013–2011

Graduate Student Researcher, Department of Computer Science, University of Pittsburgh

- I worked on several different research projects for both the Department of Computer Science and the Learning and Research Development Center, under the direction of Drs. G. Elisabeta Marai and Jingtao Wang.

2009–2005

System Administrator Aide, Department of Computer Science, Gannon University

- I maintained both software and hardware in the computer labs in the Computer and Information Science Department at Gannon University.

Industry

2018

Intern, Enterprise AI Group, Research Department, FX Palo Alto Laboratory

- I worked with Dr. Jian Zhou to design a visualization system for comprehending and communicating the structures within and behaviors of computational notebooks.

2011–2008

Software Engineer Intern, PRS Pharmacy Services

- I developed several ASP.NET systems that supported thousands of end users, both pharmacists and pharmacies.
- Included in my work on these systems were requirements gathering, database and software design, implementation, and testing/debugging.

2007

Information Systems Intern, The Children's Institute of Pittsburgh

- My primary job was to assist in a system-wide operating system upgrade across multiple sites and departments in a hospital environment.
- I also assisted with the installation of various other hardware and software, and troubleshot computer problems for other employees.

Publications

Journal Publications

2018

[UNDER REVIEW] Lata Kodali, Peter Hauck, Michelle Dowling, **John Wenskovitch**, Jessica Zeitz Self, Leanna House, Jane Robertson Evia, Scotland Leman, Leanna House, and Chris North. "Evaluating Change in Learning from Different Forms of Interactive Visualizations with a Large Case Study," *Journal of Statistics Education*.

2018

[UNDER REVIEW] Lata Kodali, **John Wenskovitch**, Nathan Wycoff, Leanna House, and Chris North. "Uncertainty in Interactive WMDS Visualizations," *Journal of Behaviour & Information Technology, Special Issue on Human Centric Visual Analytics*.

2018

[UNDER REVIEW] Michelle Dowling, Peter Hauck, Nathan Wycoff, Brian Mayer, **John Wenskovitch**, Scotland Leman, Leanna House, Nicholas Polys, and Chris North. "Interactive Visual Analytics for Sensemaking with Big Text," *Journal of Big Data Research, Special Issue on Big Data Exploration, Visualization & Analytics*.

2018

[ACCEPTED] Michelle Dowling, **John Wenskovitch**, J.T. Fry, Scotland Leman, Leanna House, and Chris North. "SIRIUS: Dual, Symmetric, Interactive Dimension Reductions," *IEEE Transactions on Visualization and Computer Graphics*.

2018

Jessica Zeitz Self, Michelle Dowling, **John Wenskovitch**, Ian Crandell, Ming Wang, Leanna House, Scotland Leman, and Chris North. "Observation-Level and Parametric Interaction for High-Dimensional Data Analysis," *ACM Transactions on Interactive Intelligent Systems (TiiS)*, 8(2), 15:1–15:36.

2018

Xin Chen, Jessica Zeitz Self, Leanna House, **John Wenskovitch**, Maoyuan Sun, Nathan Wycoff, Jane Robertson Evia, Scotland Leman, and Chris North. "Be the Data: Embodied Visual Analytics," *IEEE Transactions on Learning Technologies*, 11(1), pp. 81–95.

2018 **John Wenskovitch**, Ian Crandell, Naren Ramakrishnan, Leanna House, Scotland Leman, and Chris North. "Towards a Systematic Combination of Dimension Reduction and Clustering in Visual Analytics," *IEEE Transactions on Visualization and Computer Graphics*, 24(1), pp. 131–141.

2016 Debra M Wolf, **John Wenskovitch**, and Bonnie B. Anton. "Nurses' Use of the Internet and Social Media: Does Age, Years of Experience and Educational Level Make a Difference?" *Journal of Nursing Education and Practice*, 6(2), pp. 68–75.

2014 **John Wenskovitch**, Leonard A. Harris, Jose-Juan Tapia, James R. Faeder, and G. Elisabeta Marai. "MOSBIE: A Tool for Comparison and Analysis of Rule-Based Biochemical Models," *BMC Bioinformatics*, 15(1), pp. 316–331.

2014 Timothy Luciani, **John Wenskovitch**, Koonwah Chen, David Koes, Timothy Travers, and G. Elisabeta Marai. "FixingTIM: Interactive Exploration of Sequence and Structural Data to Identify Functional Mutations in Protein Families," *BMC Proceedings*, 8(2), S3.

2014 Chad Rittle, Yolanda C. Lang, and **John Wenskovitch**. "Tdap: The Need to Educate and Immunize," *Workplace Health & Safety*, 62(11), pp. 468–475.

2014 Debra M. Wolf, Bonnie B. Anton, and **John Wenskovitch**. "Promoting Health and Safety Virtually," *Workplace Health & Safety*, 62(7), pp. 302–306.

2014 Debra M. Wolf, Bonnie B. Anton, and **John Wenskovitch**. "Using Nurse Survey Data to Empower Patients," *Journal of Healthcare Information Management*, 28(1), pp. 58–65.

Conference and Workshop Publications

2019 **[UNDER REVIEW] John Wenskovitch**, Michelle Dowling, and Chris North. "With Respect to What: Simultaneous Interaction with Dimension Reduction and Clustering Projections," in *Proceedings of the ACM IUI Conference on Intelligent User Interfaces*. IUI '19.

2019 **[UNDER REVIEW]** Yali Bian, Nai-Ching Wang, **John Wenskovitch**, and Chris North. "DeepVA: Bridging Cognition and Computation through Semantic Interaction and Deep Learning," in *Proceedings of the ACM IUI Conference on Intelligent User Interfaces*. IUI '19.

2019 **[UNDER REVIEW] John Wenskovitch**, Michelle Dowling, Lauren Bradel, and Chris North. "Human is the Loop Revisited: Design Considerations for Implementing Semantic Interaction-Enabled Systems," in *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems*. CHI '19.

2019 **[UNDER REVIEW] John Wenskovitch**, Jian Zhao, Scott Carter, Matthew Cooper, and Chris North. "Albireo: Visualizing Computational Notebooks," in *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems*. CHI '19.

2018 **[ACCEPTED]** Michelle Dowling, **John Wenskovitch**, Peter Hauck, Adam Binford, Nicholas Polys, and Chris North. "A Bidirectional Pipeline for Semantic Interaction," in *Proceedings of the IEEE VIS Workshop on Machine Learning from User Interaction for Visualization and Analytics*. VIS 2018. Berlin, Germany.

2018 **[ACCEPTED] John Wenskovitch**, Lauren Bradel, Michelle Dowling, Leanna House, and Chris North. "The Effect of Semantic Interaction on Foraging in Text Analysis," in *2018 IEEE Conference on Visual Analytics Science and Technology (VAST)*.

2018 **John Wenskovitch**, Michelle Dowling, and Chris North. "The Cognitive and Computational Benefits and Limitations of Clustering for Sensemaking," in *Proceedings of the ACM CHI Workshop on Sensemaking in a Senseless World*. CHI'18. Montreal, QC, Canada.

2017 **John Wenskovitch** and Chris North. "Observation-Level Interaction with Clustering and Dimension Reduction Algorithms," in *Proceedings of the 2nd Workshop on Human-In-the-Loop Data Analytics*. HILDA'17. Chicago, IL, USA: ACM, 14:1–14:6.

2016 **John Wenskovitch**, James C. Lombardi, and Roger W. M. Hatfull. "FluxE: Exploring Flux in Astrophysical Simulations," in *SIGGRAPH ASIA 2016 Symposium on Visualization*. SA '16. Macau: ACM, 15:1–15:8.

2013 **John Wenskovitch**, Tim Luciani, Koonwah Chen, and G. Elisabeta Marai. "Fixing TIM: Identifying Functional Mutations in Protein Families through the Interactive Exploration of Sequence and Structural Data," in *BioVis 2013 Data Contest*. BioVis '13. Atlanta, GA. **[Vis Experts' Pick for Best Contest Submission]**.

Peer-Reviewed Conference Posters and Presentation Abstracts

2018 **John Wenskovitch**. "Dimension Reduction and Clustering Algorithm Combinations for Exploratory Data Analysis," in *2018 IEEE VIS Doctoral Colloquium Compendium*. Berlin, Germany.

2018 **John Wenskovitch**. "Software Engineers as Partners in Astronomy Software Development," in *European Week of Astronomy and Space Science (EWASS) 2018*. Liverpool, UK.

2018 Byron Rich and **John Wenskovitch**. "Embodied Astronomical Phenomenon: Using Art to Access Astronomy," in *European Week of Astronomy and Space Science (EWASS) 2018*. Liverpool, UK.

2018 **John Wenskovitch** and Chris North. "Visual Analytics and Semantic Interaction to Explore Astronomical Data," in *European Week of Astronomy and Space Science (EWASS) 2018*. Liverpool, UK.

2018 Kimberly Olszewski, Debra Wolf, and **John Wenskovitch**. "Exploring Occupational Health Nurse's Understanding and Needs in Regard to Total Worker Health (TWH)," in *2nd International Symposium to Advance Total Worker Health*. Bethesda, MD.

2018 Kimberly Olszewski, Debra Wolf, and **John Wenskovitch**. "Total Worker Health…. Where are we? Where do we need to be?" in *AAOHN 2018 National Conference*. Reno, NV.

2017 **John Wenskovitch**, James C. Lombardi Jr., and Roger W.M. Hatfull. "A Computer Science Perspective on the Astronomy Research Software Process," in *European Week of Astronomy and Space Science (EWASS) 2017*. Prague, CZ.

2016 Debra Wolf, Bonnie Anton, and **John Wenskovitch**. "Empowering Patients to Use the WWW Safely to Make Decisions Regarding Their Health," in *18th International Conference on Nursing and Healthcare*. Irving, TX.

2013 **John Wenskovitch**, Leonard Harris, James Faeder, and G. Elisabeta Marai. "A Journaling System for Rule-Based Biochemical Models," in *IEEE BioVis Poster Abstracts with System Demonstration*. Atlanta, GA.

2011 Scott Rothenberger, **John Wenskovitch**, and G. Elisabeta Marai. "Pexel and Heatmap Visual Analysis of Multidimensional Gun/Homicide Data," in *IEEE Visualization VAST Poster Compendium*. Providence, RI, pp. 297–298.

Non-Peer Reviewed Tech Reports

2018 Michelle Dowling, **John Wenskovitch**, Peter Hauck, Adam Binford, Theo Long, Nicholas Polys, and Chris North. "Construction and Usage of the Semantic Interaction Pipeline," Technical Report. Blacksburg, VA: Department of Computer Science, Virginia Tech.

2011 **John Wenskovitch**. "Exploring the Use of Rotational Input and Gyroscopes in Smartphones," Technical Report. Pittsburgh, PA: Department of Computer Science, University of Pittsburgh **[Master's Project Report]**.

2009 **John Wenskovitch**, Frank Hiller, and Justin Furiga. "Rosetta Fist: An Interactive Sign Language Tutoring System," Technical Report. Erie, PA: Department of Computer and Information Sciences, Gannon University **[Senior Capstone Project Report]**.

Workshops and Sessions Organized

2019 **[UNDER REVIEW]** Amruta Jaodand, **John Wenskovitch**, and Rachael Ainsworth. "Hack Day," in *EWASS 2019*. Lyon, France.

2019 **[UNDER REVIEW]** Amruta Jaodand, **John Wenskovitch**, and Rachael Ainsworth. "Visualising and Understanding Data in Astronomy," in *EWASS 2019*. Lyon, France.

2018 **John Wenskovitch**, Michelle Dowling, Chris North, Remco Chang, Alex Endert, and David Rogers. "Machine Learning from User Interaction for Visualization and Analytics," in *IEEE VIS 2018*. Berlin, Germany.

Courses Taught

Virginia Tech, Instructor

2018

Computer Science 1064, Introduction to Programming in Python, Taught one time

Developing computational problem solving skills and software solutions to a variety of multimedia, scientific, and engineering problems using the Python programming language. Statement sequencing, conditional program flow, iteration, functional decomposition, and recursion. Simple numeric data types, strings, lists, list comprehensions, sets, and dictionaries. Input/output of file-based data, content obtained from the web, and manipulation of digital images. Basic object-oriented concepts, classes, objects, and methods.

2018
2017

Computer Science 2505, Introduction to Computer Organization I, Taught two times

An introduction to the design and operation of digital computers. Works up from the logic gate level to combinational and sequential circuits, information representation, computer arithmetic, arithmetic/logic units, control unit design, basic computer organization, relationships between high level programming languages and instruction set architectures.

Allegheny College, Instructor

2017
2015

Computer Science 112, Introduction to Computer Science II, Taught four times

A continuation on the basic principles of computer science, expanded to emphasize data structures, data abstraction, algorithm design, the analytical and experimental evaluation of algorithm performance, and object-oriented design and implementation techniques. The Spring 2017 instance of this course was taught online.

2016
2014

Computer Science 210, Principles of Computer Organization, Taught two times

Basic organization and operation of computers, including logical structure, hardware components, machine and assembly language, computer system performance, internal representation of information, instruction set architecture computer arithmetic, and design and operation of control units. The Fall 2016 instance of this course was taught online.

2014

Computer Science 230, Theory of Computation, Taught one time

The theories of finite-state machines, pushdown automata, and Turing machines, as well as the relation between automata and the formal languages that they recognize. Also covered are topics related to computational theory, lexical analysis and parsing, and reductions.

2016
2015

Computer Science 250, Analysis of Algorithms, Taught two times

Selected topics from the analysis of algorithms, including models of computation, design of efficient algorithms and algorithmic programming methodology, computational complexity and mathematical analysis of algorithms, and NP-completeness.

2015

Computer Science 382, Visual Computing, Taught one time

An introduction to the fundamentals of computer graphics, visualization, and visual computing. Topics covered include concepts of light, color, two- and three-dimensional representations, data visualization, image processing, image rendering, and animation. These concepts are illustrated using medical imaging, simulation, human vision processing, computer art, and other applications. Laboratory assignments covering each major course topic provide a solid basis for advanced work in computer graphics and visualization.

Chatham University, Instructor

2013

Math 105, College Algebra, Taught one time

Functional and inverse relationships, the construction and solution of functional equations, the application of functions in modeling relationships and processes, systems of equations and inequalities, and the graphical representations of numerical relationships.

2013

Math 108, Precalculus, Taught one time

The coordinate system, functions and their graphs, solutions of equations and inequalities, trigonometric functions and their graphs, trigonometric identities, and the historical and cultural significance of mathematics.

2012

Math 110, Elementary Statistics, Taught three times

Exploratory data analysis, probability and combinatorics, discrete and continuous probability distributions, confidence intervals, and hypothesis testing.

2012

Math 244, Discrete Mathematics, Taught one time

Propositional and predicate logic, mathematical writing, sets and Boolean algebra, functions and relations, combinatorics, probability, and graphs and trees.

University of Pittsburgh, Teaching Assistant

2011–2010 Computer Science 0401, Intermediate Programming using Java, Assisted two times
Java syntax and control structures, methods, classes, arrays, and simple user interfaces and graphical components.

2011 Computer Science 0441, Discrete Structures for Computer Science, Assisted two times
Logic, proofs, sets, relations, functions, counting, and probability, with an emphasis on application in computer science.

2012 Computer Science 0447, Computer Organization and Assembly Language, Assisted one time
MIPS syntax and control structures, binary arithmetic, context switching, logic design, processor data paths, processor controls, and pipelining.

2012 Computer Science 0449, Introduction to Systems Software, Assisted one time
C syntax and control structures, memory management, static and dynamic linking, data representation, interaction with operating systems, device drivers, signal handling, threading, and communication and networking.

2013–2012 Computer Science 1501, Algorithm Implementation, Assisted two times
Exhaustive search, pruning, recursion and backtracking, search trees and tries, hashing functions, substring matching, compression, encryption, graph representations, path algorithms, and dynamic programming.

2014 Computer Science 1511, Introduction to the Theory of Computation (Cross-Listed Graduate Course), Assisted one time
Regular and context-free languages, state machines, pushdown automata, Turing machines, decidability, reducibility, and computational complexity.

2013 Computer Science 1566, Introduction to Computer Graphics, Assisted one time
Graphics framework, OpenGL basics, geometric transformations, scan conversion, particle systems, texture mapping, ray tracing, and photorealism.

2014 Computer Science 1567, Programming and System Design on a Mobile Robot Platform, Assisted one time
Open- and closed-loop control, sensing, localization, planning, multi-robot control, human-robot interaction, learning, robot platforms, and robots in the real world.

2011 Computer Science 2510, Operating Systems (Graduate Course), Assisted one time
Introduction to distributed systems, clocks and clock synchronization, distributed mutual exclusion, consistency, replication, load balancing, fault tolerance, and DDoS.

2014 Computer Science 2620, Interdisciplinary Modeling and Visualization (Graduate Course), Assisted one time
Human vision and color, visual perception and attention, multi-dimensional data visualization, interaction, user interface design, surfaces and volumes, evaluation and user studies, and uncertainty visualization.

Grants, Scholarships, and Funding Awards

2018–2017 “Davenport Fellowship,” Virginia Tech Computer Science funding award. $4,000 per academic year.

2019–2017 “IC CAE Scholar,” Virginia Tech funding award from the Ted and Karyn Hume Center for National Security and Technology. $3,000 per academic year.

2017–2016 “Pratt Fellowship,” Virginia Tech Computer Science funding award for “exceptional applicants” accepted to the department. $4,000 per academic year.

2016–2015 “Demmler Award for Teaching Innovation,” Allegheny College grant towards new course and curriculum development. $4,000.

2009–2005 “Gannon University Engineering Design Scholarship,” 1st prize. $3,000 per academic year.

Professional Distinctions and Awards

2018 Invited to Dagstuhl Seminar 18462: Provenance and Logging for Sense Making (November 11–16)

2018 Accepted to the Doctoral Colloquium at IEEE VIS 2018

2018 Computer Science Graduate Student Service Award

2017 Joined Phi Kappa Phi National Honor Society (Requirement: Top 10% of graduate students by GPA)

2017 Gannon University featured alumnus, `http://www.gannonalumni.org/JohnWenskovitch`

2015 Awarded a summer residency at Ars Bioarctica in Kilpisjärvi, Finland

2014–2013 Named the Teaching Assistant Mentor for the University of Pittsburgh Department of Computer Science

2013 Received the BioVis Data Contest Vis Experts' Pick Award for FixingTIM

2013 Received the University of Pittsburgh Department of Computer Science Digital Media Competition Runner-Up

2012 Received the University of Pittsburgh Department of Computer Science Teaching Assistant Award (best teaching evaluation scores for the 2011–2012 academic year)

2009–2005 Eight consecutive semesters on the Gannon University Dean's List

2007 Who's Who Among Students at American Universities & Colleges

2006 Joined Lambda Sigma National Honor Society, for second-year college and university students (Requirement: 3.25 first year GPA)

2006 Joined Phi Eta Sigma National Honor Society, for first-year college and university students (Requirement: 3.5 first semester GPA)

Professional Service

Organizing & Program Committees

2019 ACM IUI Proceedings Chair

2018 Symposium on Visualization in Data Science (VDS) Program Committee

2017–2014 SIGGRAPH Asia Student Volunteer Team Leader (2014, 2016–2017)

2018–2013 IEEE VIS Student Volunteer (Shift Supervisor 2013–2014, Committee Co-Chair 2015–2018)

Reviewing

2018 IEEE VIS (VAST Track)

2018 IEEE VIS (InfoVis Track)

2017 Transactions on Visualization and Computer Graphics (TVCG)

Student Volunteering

2018 ACM CHI Executive Committee Volunteer

2017–2013 SIGGRAPH Asia Student Volunteer

2018–2012 IEEE VIS Student Volunteer

Institutional Service

Virginia Tech

2019–2017 Department of Computer Science Graduate Council
- Initial contact point for graduate students during reboot (2017)
- Interim President (2017–2018)
- Past President (2018–2019)
- Representative to Computer Science Department faculty meetings (2017–2018)
- Bylaws Subcommittee (2017–2018)
- Graduate Recruitment weekend volunteer (2017)
- Graduate Recruitment weekend organizer (2018)
- Advisory Board meeting volunteer (2017)

Allegheny College

2017–2014 Telescope Operator, Newton Observatory

2015 Department of Computer Science Open House Volunteer

2014 ACM-ICPC (International Collegiate Programming Contest) Team Coach

University of Pittsburgh

2014–2012 Department of Computer Science Graduate Student Organization
- President (2012–2013)
- Secretary (2013–2014)

2014–2012 College of Arts & Sciences Graduate Student Organization
- Elizabeth Baranger Teaching Awards Committee Chair (2013–2014)

2014–2012 Graduate & Professional Student Government Representative

Gannon University

2009–2005 Association for Computing Machinery (ACM) Student Chapter
- Chair (2007–2008)
- Vice-Chair (2005–2007)
- Secretary (2008–2009)
- Computer Science Games Participant (2007, 2008, 2009)

2009–2005 Environmental Club
- President (2006–2008)

2009–2005 Honors College
- *Excalibur* Newsletter Co-Editor (2006-2009)
- Student Advisory Board (2007–2009)

2009–2005 G.I.V.E. Day Volunteer

2009–2006 Department of Computer and Information Sciences Open House Volunteer

2008–2006 Engineering Summer Camp Volunteer

Open Source Software

2015 **Castor** (named post-publication), A prototype system for projection of and simultaneous interaction with Dimension Reduction (force-directed) and Clustering (k-means) algorithms.

2015

Flux Explorer (FluxE), A software package for visualizing effective temperature and spectral flux density values computed from astrophysical simulations, focusing on stellar merger simulations. http://starsmasher.allegheny.edu/fluxe/

2014
2013

FixingTIM, A visualization tool for exploring families of proteins. Release is currently Linux only, but functions well in a virtual environment. http://vizwizards.com/fixingTIM.html

2014
2012

Model Simulation Browser and Interactive Explorer (MOSBIE), An extension of RuleBender for browsing families of rule-based models, identifying similar structures across the individual models. http://visualizlab.org/mosbie

2014
2012

RuleBender, A visualization tool for constructing, debugging, simulating, and analyzing rule-based biological models. Distributions for Windows, Linux, and OSX, 32-bit and 64-bit. The system has 1000+ downloads in 2012 alone and is used at more than 40 institutions. http://www.rulebender.org

Additional Affiliated Software Projects

2018

Cosmos, A visual analytics tool for the exploration of large document collections, but in contrast to StarSPIRE, using immediate WMDS reprojections rather than force-directed incremental formalism.

2017

SIRIUS, A visual analytics tool for the parallel exploration of attributes and observations in quantitative data.

2017

StarSPIRE, A visual analytics tool for the exploration of large document collections using observation-level interaction and implicit querying.

2017

Be the Data, An interactive system to teach students analytical concepts for understanding high-dimensional data projection through embodied interaction.

2016

Andromeda, A visual analytics tool for the exploration of quantitative, high-dimensional data using both parameter and observation-level interactions.

2016

Semantic Interaction Pipeline, An framework to standardize and structure multi-model semantic interaction systems through a modular, bidirectional pipeline.

Art Projects and Associated Shows & Talks

2018

Pulsar2Person (P2P), Interactive sonification system for listening to the universe via pulsar data. Collaboration with Byron Rich. Discussed at:

- EWASS 2018, Liverpool, United Kingdom (April 2018, Artist Talk)

2018

Microbiome Ark (M-Ark), Spacecraft prototype containing a human microbiome and communication capabilities. Collaboration with Byron Rich. Discussed at:

- EWASS 2018, Liverpool, United Kingdom (April 2018, Artist Talk)
- ISEA 2018, Durban, South Africa (June 2018, Artist Talk)

2017

Creatures Such as We, An autonomous airship equipped with a family of sensors to locate ideal conditions for the growth of its cargo. Collaboration with Byron Rich. Discussed at:

- ISEA 2017, Manizales, Colombia (June 2017, Artist Talk)
- Balance Unbalance, Plymouth, UK (August 2017)
- Ars Electronica Festival, Linz, Austria (September 2017)

2016 **The Interrupted Living Machine**, A project designed to draw attention to climate change and pollution. Software scrapes Twitter and Instagram looking for hashtags related to environmental degradation. When a critical number of hashtags have been counted, noise is generated in the signal transmitted from temperature, humidity, and pH sensors in a greenhouse, causing both false readings and the greenhouse to improperly react to the false stimulus. Collaboration with Byron Rich. Discussed at:

- ISEA 2016, Hong Kong (May 2016, Artist Talk)

2016 **Resonant**, This project is an audio-zation of the vessel in waveform. A simple line drawing mapping the form of each vessel was made then imported into a custom program converting the drawing into a .wav audio file. Parameters were set based on the intrinsic tonality of the vessel. For example: if the vessel was rung like a bell and its tone was an $E\flat_4$, meaning it has a frequency of 311.127 Hz, the program uses this numeric value to give tonality to the waveform. Essentially, each vessel is playing the sound of itself. Collaboration with Ian F. Thomas. Shown at:

- NCECA (National Council on Education for the Ceramic Arts) 2016, Kansas City Convention Center, Kansas City, MO (March 2016)

2016 **Immor(t)al**, This project scrutinizes the historical and current shifts in medical research and ethics as pertaining to definitions of informed consent and body sovereignty, while broadening media and scientific literacy by deploying other misunderstood tools (the EEG) in a creative manner. Information obtained from the EEG is used to manipulate growing conditions for a colony of HeLa GFP cancer cells inside a custom-designed incubator. Collaboration with Byron Rich and Heather Brand. Shown and discussed at:
2015

- Phantom Vibrations, State University of New York at Buffalo, Buffalo, NY (April-May 2015)
- ISEA 2015, Vancouver, BC, Canada (August 2015, Artist Talk)
- ISEA 2016, Hong Kong (May 2016, Artist Talk)

2015 **TWEET_SHOT**, A fictional gun control device which automatically posts a tweet to a dedicated account when the trigger of a toy gun is pulled. The project is intended to be a glimpse into gun culture and the potential in public shaming, or conversely, glorification of an act of violence in the social media sphere. Collaboration with Byron Rich. Shown at:

- ELECTRODOME, Gothenburg, Sweden (January-May 2015)
- Stimulus|Response|Affect, Oakland University, Rochester, MI (October 2015)

Presentations

2018 "Visualization in Astronomy", Charlottesville Astronomical Society, October 03, 2018

2018 "Why Visualization is Awesome", VT Grad Council Lightning Talks Event, September 06, 2018

2018 Research Presentations, FX Palo Alto Laboratory

- "Kilo-Notebook Visualization," July 13, 2018
- "VYTHON: Visualizing Your Thoughts in High-Quality without Obfuscating Notebooks," Intern Poster Session, August 9, 2018
- "Visualizing Computational Notebooks," Internship Research Talk, August 14, 2018
- "System and Method for Visualization of Computational Notebooks," Invention Proposal Presentation, August 15, 2018

2018 Artist Talk and Panel Discussion, ISEA 2018, Durban, South Africa, June 28, 2018

2018 "Dirichlet Process Clustering", Methodology Research Group, May 4, 2018

2018 "The Computational and Cognitive Benefits and Limitations of Clustering for Sensemaking", CHI 2018 Workshop: Sensemaking in a Senseless World, Montreal, QC, Canada, April 21, 2018

2018 "Software Engineers as Partners in Astronomy Research Software Development", EWASS 2018, Liverpool, UK, April 4, 2018

2017 "Towards a Systematic Combination of Dimension Reduction and Clustering Algorithms in Visual Analytics", VAST 2017, IEEE VIS, Phoenix, Arizona, October 5, 2017

2017 Astronomical Research Software Symposium Presentation, EWASS 2017, Prague, Czechia, June 28, 2017

2017 Artist Talk, ISEA 2017, Manizales, Colombia, June 13, 2017

2016 Presentations to the Roanoke Valley Astronomical Society, Roanoke, VA
- "Telescope Transportation Troubles and Mastering Messier," November 21, 2016
- "EWASS 2017 Recap and Developments," July 17, 2017
- "Visualization in Astronomy," February 19, 2018

2016 Corporate Visual Analytics Research Presentation, multiple presentations include:
- General Dynamic Missions Systems, October 13, 2016
- Boeing, January 20, 2017
- General Dynamic Missions Systems, March 24, 2017
- General Dynamic Missions Systems, March 31, 2017
- Eastman Chemical, April 21, 2017

2016 Research Presentation, BaVA (Bayesian Visual Analytics) Research Group
- "Clusters!" September 22, 2016
- "VIS 2016 Recap," November 17, 2016
- "A Survey of Multidimensional Projection Techniques," October 18, 2017

2016 Research Presentation, InfoVis@VT Research Group
- "What I Did on My Summer Vacation (FluxE)," September 13, 2016
- "VIS 2016 Recap," November 15, 2016
- "A Conversation on User Studies," February 1, 2017
- "How to Write a Good InfoVis/VAST Paper," March 1, 2017
- "Towards a Systematic Combination of Dimension Reduction and Clustering Algorithms in Visual Analytics" (Practice Talk), September 27, 2017
- "VIS 2017 Recap," October 25, 2017
- "A Review of Local Affine Multidimensional Projection," November 08, 2017
- "The Computational and Cognitive Benefits and Limitations of Clustering for Sensemaking" (Practice Talk), April 18, 2018
- "Kilo-Notebook Visualization," August 29, 2018
- "System and Method for Visualization of Computational Notebooks," September 5, 2018

2016 Presentations to CS5764 Information Visualization class:
- Processing Presentation and Demo, August 31, 2016
- VIS 2016 Recap, November 16, 2016

2016 "FluxE: Exploring Flux in Astrophysical Simulations", SIGGRAPH Asia 2016, Macao, December 8, 2016

2016 Artist Talk, ISEA 2016, Hong Kong, May 20, 2016

2016–2014 Allegheny College Computer Science Guest Lectures
- "Matrices and Graphics," CMPSC112 Introduction to Computer Science II class, April 09, 2014
- "Introduction to Computer Graphics and Information Visualization Research," CMPSC580 Junior Seminar class, April 02, 2015
- "Introduction to Information Visualization Research," CMPSC580 Junior Seminar class, March 01, 2016

2015 RuleBender and MOSBIE Research Presentation, Post-VIS 2015 Seminar at the University of Illinois in Chicago, October 30, 2015

2015 Artist Talk, Stimulus|Response|Affect, Oakland University, Auburn Hills, MI, October 15, 2015

2015 Artist Talk, ISEA 2015, Vancouver, BC, August 17, 2015

2014 "Fixing TIM: Identifying Functional Mutations in Protein Families through the Interactive Exploration of Sequence and Structural Data", Pittsburgh Biophysical Theory Club, February 05, 2014

2014–2013 Processing Tutorial, Presented to three CS2620 and CS3620 Visualization classes

2013 "Fixing TIM: Identifying Functional Mutations in Protein Families through the Interactive Exploration of Sequence and Structural Data", BioVis 2013 Data Contest Presentation, October 14, 2013

2012 "RuleBender and MOSBIE Research Survey", CS2001 "Research Topics in Computer Science" course, November 20, 2012

2014–2011 Research Presentations, University of Pittsburgh MIPS Research Group, (presentations beginning in Fall 2012 were in joint meetings with iVRL; see below)

- "Understanding the Usage of Gyroscopes in Mobile User Interfaces," May 17, 2011
- "Exploring the Use of Rotational Input and Gyroscopes in Smartphones," May 28, 2011
- "BackTap: Exploring Interactions with the Back of Mobile Devices," January 29, 2012

2014–2011 Research Presentations, University of Pittsburgh iVRL Lab

- "2D Glyphs and Multidimensional Data: Gun Availability and Firearm Homicides," April 20, 2011
- "VisWeek 2011 Recap," November 1, 2011
- "RuleBender Academic Year Research Plan," September 11, 2012
- "VisWeek 2012 Recap," October 23, 2012
- "Simulation Journaling in RuleBender," April 30, 2013
- "Summer Semester Research Plan," June 12, 2013
- "Fixing TIM: BioVis Contest Challenge and Data Analysis," July 10, 2013
- "Rule-Based Modeling Academic Year Research Plan," September 10, 2013
- "Vis 2013 Recap," October 23, 2013
- "Fixing TIM: Identifying Functional Mutations in Protein Families through the Interactive Exploration of Sequence and Structural Data," November 6, 2013
- "A Journaling System for Rule-Based Biochemical Models," February 24, 2014

Advising

Supervised Theses (First and Second Reader)

2017 SJ Guillaume. "Do the Visual Features of Stack Overflow Influence Information Foraging Behavior?" Technical Report CS2017-03, Meadville, PA: Department of Computer Science, Allegheny College.

2017 Jacob Hanko. "Allegheny College Online Campus Map," Technical Report CS2017-04, Meadville, PA: Department of Computer Science, Allegheny College.

2017 Lucas Hawk. "Intelligent Monte-Carlo Tree Search for Perfect Information Games," Technical Report CS2017-05, Meadville, PA: Department of Computer Science, Allegheny College.

2017 Daniel Ocampo. "The Effects and Analysis of Mobile Devices," Technical Report CS2017-07, Meadville, PA: Department of Computer Science, Allegheny College.

2017 Claire Pickhardt. "Computer Science as Seen by a Newcomer: Using Surveying & Visualization Tools to Glean Understanding," Technical Report CS2017-08, Meadville, PA: Department of Computer Science, Allegheny College.

2017 Dillan Smith. "The Course Map," Technical Report CS2017-09, Meadville, PA: Department of Computer Science, Allegheny College.

2017 Herbert Torrance. "Competitive Gaming Player Improvement," Technical Report CS2017-10, Meadville, PA: Department of Computer Science, Allegheny College.

2016 Katherine Beisler. “Fault or No Fault? A Measure of Human Ability to Detect Layout Faults in Web Pages,” Technical Report CS2016-02, Meadville, PA: Department of Computer Science, Allegheny College.

2016 Francis Craft. “Environment Monitoring with Arduino Uno and Sensors,” Technical Report CS2016-04, Meadville, PA: Department of Computer Science, Allegheny College.

2016 Andreas Landgrebe. “Empirical Study of Tools to Assist Java Programmers in Finding Bugs,” Technical Report CS2016-08, Meadville, PA: Department of Computer Science, Allegheny College.

2016 Alexander Means. “A Virtual Campus Tour,” Technical Report CS2016-09, Meadville, PA: Department of Computer Science, Allegheny College.

2015 Tristan Chaneller. “An Eclipse-Based Integrated and Automated Fault Localization System,” Technical Report CS2015-02, Meadville, PA: Department of Computer Science, Allegheny College.

2015 Michael Ligouri. “Evaluating File System Performance in Windows and Ubuntu with Varied RAM Allocation,” Technical Report CS2015-05, Meadville, PA: Department of Computer Science, Allegheny College.

Undergraduate Students Advised

2014–2017 Claire Pickhardt, Dillan Smith

2015–2017 Bryce Evans

2015–2016 Evan Fann

2014–2015 Michael Coddington

Miscellaneous Volunteering and Service

2011– Wagman Observatory Telescope Operator (and other AAAP/ORAS/RVAS public star party events and astronomy outreach activities)

2001– City of Lower Burrell Recycling Day volunteer

1999–2005 Pennsylvania Game Commission Safety Program, Junior Instructor

Outreach Activities

2018 Twitter Outreach, Week-long host of the AstroTweeps Twitter account, discussing data visualization and amateur outreach, September 24-30, 2018

2016 Computational Astrophysics Presentation, American Scholar Program (visiting international students), July 5 and July 11, 2016

2016 Computational Astrophysics Presentation, Visiting elementary school students, June 3, 2016

2015 Protein Modeling and Visualization Presentation, Spring 2015 Allegheny College Gator Day, March 31, 2015

2013 Introduction to Video Games Tutorial, Technology Leadership Initiative Workshop (introducing computer Science to middle school girls), May 11, 2013

2012 Visualization Research Presentation, SciTech Science Forum, Pittsburgh Academy for Science and Technology, January 18, 2012

University Affiliations

2016– Virginia Tech Discovery Analytics Center

2015 Virginia Tech Department of Computer Science

2015 Virginia Tech BaVA (Bayesian Visual Analytics) Research Group

2015 InfoVis Lab @ Virginia Tech

2014 2017 Allegheny College Department of Computer Science

2012 2013 Chatham University Department of Mathematics

2009 2014 University of Pittsburgh Department of Computer Science

2011 2014 University of Pittsburgh MIPS (Mobile Interface & Pedagogical Systems) Research Group

2011 2014 University of Pittsburgh iVRL (Interdisciplinary Visualization Research Lab)

2005 2009 Gannon University Department of Computer and Information Sciences

2005 2009 Gannon University Department of Mathematics

2005 2009 Gannon University Honors College

Professional Affiliations and Memberships

2016 Roanoke Valley Astronomical Society (RVAS)
- Vice-President (2017-2019)
- Interim President (2018)
- Interim Secretary (2018)

2015 International Dark-Sky Association
- Pittsburgh Chapter (2017-Present)

2014 The Astronomical League

2014 Oil Region Astronomical Society (ORAS)

2013 Institute of Electrical and Electronics Engineers (IEEE)

2013 IEEE Computer Society

2012 Society for Industrial and Applied Mathematics (SIAM)

2011 Amateur Astronomers' Association of Pittsburgh (AAAP)
- Wagman Observatory Committee Member (2014-Present)

2009 The Planetary Society

2005 Association for Computing Machinery (ACM)
- ACM SIGGRAPH (2013-Present)

Curriculum Development

- Began an initiative towards online education at Allegheny College.
- Assisted in a revision of Computer Science course titles, descriptions, and a general restructuring of Computer Science curriculum at Allegheny College.
- 2015 Demmler Award for Teaching Innovation, used towards developing a new series of Computer Science theory courses.
- Attended NSF-funded Faculty Training Workshop on Processing, June 21-24 2015, Southern Methodist University, Dallas, TX, used towards developing a Visual Computing course in Fall 2015.

Personal Interests

Science fiction (books, TV, and movies), amateur astronomy, hiking, hockey and soccer, live music, roadtrips and travel, running marathons, model building

Additional Resources

2017 ORCID, http://www.orcid.org/0000-0002-0573-6442

2012 LinkedIn, https://www.linkedin.com/in/johnwenskovitch/

2010 Website, http://www.johnwenskovitch.com