

# Publications

John Edwards

September 15, 2025

## References

- [1] Kathleen Isenegger, Salma El Otmani, John Edwards, and Colleen Lewis. A Randomized Controlled Trial of Syntax Exercises in an Introductory Python Course. In *ACM International Computing Education Research (ICER) Conference*. ACM, 2025.
- [2] Kaden Hart, Christopher Warren, and John Edwards. Time-on-task estimation for tasks lasting hours spread over multiple days. *PLOS ONE*, 2025.
- [3] Sadra Jafari Ghalehkohneh, Jared Arnell, Kaden Hart, Hillary Swanson, Boyd Edwards, and John Edwards. Upper-division physics simulations with equation manipulation. *Physical Review Physics Education Research*, 2025.
- [4] Rida Munir, Jared Arnell, Hillary Swanson, and John Edwards. "It's just a math equation": Examining resource coordination in physics students' reasoning about exponential functions and drag. In *Proceedings of the Physics Education Research Conference (PERC)*, 2025.
- [5] Jared Arnell, Rida Munir, Hillary Swanson, and John Edwards. "Psi equals craziness": Upper-division physics students' conceptions of Greek letters. In *Proceedings of the Physics Education Research Conference (PERC)*, 2025.
- [6] John Edwards, Arto Hellas, and Juho Leinonen. On the Opportunities of Large Language Models for Programming Process Data. In *The 27th Australasian Computing Education Conference (ACE)*, 2025.
- [7] Sulove Bhattarai and John Edwards. Compilable states. In *2025 Inter-mountain Engineering, Technology and Computing (i-ETC)*. IEEE, 2025.
- [8] Aashish Ghimire, James Prather, and John Edwards. Generative AI in Education: A Study of Educators' Awareness, Sentiments, and Influencing Factors. In *IEEE International Conference on Frontiers in Education (FIE)*. IEEE, 2024.

- [9] Jared Arnell, Hillary Swanson, Boyd Edwards, Kaden Hart, Sadra Jafari, and John Edwards. "Instead of gravity pointing down, it's now pointing up": Enhancing physics students' connection between mathematics and mechanism. In *Proceedings of the Physics Education Research Conference (PERC)*, 2024.
- [10] Kaden Hart, Christopher Warren, Seth Poulsen, and John Edwards. Phone Use While Programming. In *Proceedings of The 17th International Conference on Educational Data Mining (EDM)*, 2024.
- [11] Aashish Ghimire and John Edwards. From Guidelines to Governance: A Study of AI Policies in Education. In *International Conference on Artificial Intelligence in Education (AIED)*, 2024.
- [12] Aashish Ghimire and John Edwards. Coding With AI: How Are Tools Like ChatGPT Being Used By Students In Foundational Programming Courses. In *International Conference on Artificial Intelligence in Education (AIED)*, 2024.
- [13] Jaxton Winder, Erik Falor, Seth Poulsen, and John Edwards. The Shell Tutor: An Intelligent Tutoring System For The UNIX Command Shell And Git. In *ACM conference on Innovation and Technology in Computer Science Education (ITiCSE)*, 2024.
- [14] Jared Arnell, Hillary Swanson, Boyd Edwards, and John Edwards. Operational Routes: A Construct for Characterizing Intermediate Learners' Cognitive Navigational Strategies. In *International Conference of the Learning Sciences (ICLS)*, 2024.
- [15] Jaxton Winder, Elise Francis, Bridget Staley, and John Edwards. Incremental Development and CS1 Student Outcomes And Behaviors. In *The 26th Australasian Computing Education Conference (ACE)*, 2024.
- [16] Joshua Urry and John Edwards. A Framework that Explores the Cognitive Load of CS1 Assignments Using Pausing Behavior. In *ACM Technical Symposium on Computing Science Education (SIGCSE)*, 2024.
- [17] Logan Hendricks and John Edwards. White-Label Bootcamps: Branding and Opinions. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2024.
- [18] Logan Hendricks and John Edwards. Coding Bootcamps: Employment Outcomes. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2024.
- [19] Caleb Syndergaard and John Edwards. Revisiting Plagiarism Deterrence in CS1 Through Keystroke Data. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2024.

- [20] Muhammad Fawad Akbar Khan, John Edwards, Paul Bodily, and Hamid Karimi. Mining Student Behavior Patterns for Enhanced Performance Prediction in Introductory Programming: Keystroke Analysis and Ensemble Strategies. In *IEEE International Conference on Big Data (BigData)*, 2023.
- [21] Stephanie Gonzales, Hillary Swanson, and John Edwards. Activity During High-Repetition Practice of Syntax. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2023.
- [22] Jaxton Winder, Erik Falor, and John Edwards. Early Submission of Project Analysis Milestones Correlates Positively With Student Project Performance; Incentives for This Early Project Analysis Positively Changes Student Behaviors. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2023.
- [23] Aashish Ghimire, Rita Ghimire, and John Edwards. Metadata in Tweets: Broadcasting a Lot More Than What You Tweet. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2023.
- [24] Aashish Ghimire, Raj Shrestha, and John Edwards. Too Legal; Didn’t Read (TLDR): Summarization of Court Opinions. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2023.
- [25] Arto Hellas, Juho Leinonen, and John Edwards. Code Mimicking: The Impact of Program Output on Novice Programmers’ Learning Gains. In *ACM conference on Innovation and Technology in Computer Science Education (ITiCSE)*, 2023.
- [26] Steven Scott, Arto Hellas, Juho Leinonen, and John Edwards. Factors Affecting Compilable State at Each Keystroke in CS1. In *ACM International Conference on Software Engineering (ICSE), Software Engineering Education and Training (SEET) track*, 2023.
- [27] John Edwards, Kaden Hart, Raj Shrestha, et al. Review of csedm data and introduction of two public cs1 keystroke datasets. *Journal of Educational Data Mining*, 15(1):1–31, 2023.
- [28] Kaden Hart, Chad Mano, and John Edwards. Plagiarism Deterrence in CS1 Through Keystroke Data. In *ACM Technical Symposium on Computing Science Education (SIGCSE)*, 2023.
- [29] Kaden Hart, Christopher Warren, and John Edwards. Accurate Estimation of Time-on-Task While Programming. In *ACM Technical Symposium on Computing Science Education (SIGCSE)*, 2023.
- [30] Boyd F Edwards, Cade Pankey, and John M Edwards. Inertial motion on the earth’s spheroidal surface. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 2022.

- [31] John Edwards, Kaden Hart, and Christopher Warren. A Practical Model of Student Engagement While Programming. In *ACM Technical Symposium on Computing Science Education (SIGCSE)*, 2022.
- [32] Delaney Moore, John Edwards, Hamid Karimi, Rajiv Khadka, and Paul Bodily. Temporal Abstract Syntax Trees for Understanding Student Coding Thought Process. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2022.
- [33] Marina Johnson, Hillary Swanson, and John Edwards. Syntax Exercises and Their Effect on Computational Thinking. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2022.
- [34] Aashish Ghimire and John Edwards. Introspection with Data: Using Personality Traits for Academic Major Selection. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2022.
- [35] Gordon Fjeldsted and John Edwards. Quantifying Student Struggles using Heatmaps and Keystroke Data. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2022.
- [36] Raj Shrestha, Juho Leinonen, Albina Zavgorodniaia, Arto Hellas, and John Edwards. Pausing While Programming: Insights From Keystroke Analysis. In *ACM International Conference on Software Engineering (ICSE), Software Engineering Education and Training (SEET) track*, 2022.
- [37] Raj Shrestha, Juho Leinonen, Arto Hellas, Petri Ihantola, and John Edwards. CodeProcess Charts: Visualizing the Process of Writing Code. In *The Twenty-Fourth Australasian Computing Education Conference (ACE)*, 2022.
- [38] Eric Bagley, Jessica Shumway, and John Edwards. Second-grade Students’ Use of Visual Programming to Learn Multiplication: Leveraging the Concept of Iteration. In *The Twenty-Fourth Australasian Computing Education Conference (ACE)*, 2022.
- [39] Boyd F Edwards and John M Edwards. Geodetic Model for Teaching Motion on the Earth’s Spheroidal Surface. *European Journal of Physics*, 2021. Accepted for publication.
- [40] Anna Ly, John Edwards, Michael Liut, and Andrew Petersen. Revisiting Syntax Exercises in CS1. In *ACM Conference on Information Technology Education (SIGITE)*, 2021.
- [41] John Edwards, Cameron Krome, and Tracy Payne. Computation of Positively Graded Filiform Nilpotent Lie Algebras in Low Dimensions. *Symbolic Computation*, 2021. Accepted for publication.

- [42] Bishal Sainju, Christopher Hartwell, and John Edwards. Job satisfaction and employee turnover determinants in Fortune 50 companies: Insights from employee reviews from Indeed.com. *Decision Support Systems*, 2021. Accepted for publication.
- [43] Albina Zavgorodniaia, Raj Shrestha, Juho Leinonen, Arto Hellas, and John Edwards. Morning or Evening? An Examination of Circadian Rhythms of CS1 Students. In *ACM International Conference on Software Engineering (ICSE), Joint Track on Software Engineering Education and Training (JSEET)*, 2021.
- [44] Shelsey Sullivan, Hillary Swanson, and John Edwards. Student attitudes toward syntax exercises in CS1. In *ACM Technical Symposium on Computing Science Education*, 2021.
- [45] Joseph Ditton, Hillary Swanson, and John Edwards. External imagery in computer programming. In *ACM Technical Symposium on Computing Science Education*, 2021.
- [46] John Edwards, Juho Leinonen, Albina Zavgorodniaia, Chetan Birthare, and Arto Hellas. Programming versus natural language: on the effect of context on typing in CS1. In *ACM International Computing Education Research (ICER) Conference*, 2020.
- [47] John Edwards, Joseph Ditton, Dragan Trninic, Shelsey Sullivan, Hillary Swanson, and Chad Mano. Syntax exercises in CS1. In *ACM International Computing Education Research (ICER) Conference*, 2020.
- [48] Steven Scott, Jaxon Willard, and John Edwards. High Dimensional Event Exploration over Multiple Simulations. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2020.
- [49] John Edwards, Joseph Ditton, Bishal Sainju, and Joshua Dawson. Different Assignments as Different Contexts: Predictors Across Assignments and Outcome Measures in CS1. In *IEEE Intermountain Engineering, Technology, and Computing Conference (i-ETC)*. IEEE, 2020.
- [50] Christopher Hartwell, Tyler Orr, and John Edwards. The Effect of Online Application Efficiency on Applicant Attrition. *International Journal of Selection and Assessment*, 2020.
- [51] John Edwards, Juho Leinonen, and Arto Hellas. A Study of Keystroke Data in Two Contexts: Written Language and Programming Language Influence Predictability of Learning Outcomes. In *ACM Technical Symposium on Computing Science Education*. ACM, 2020.
- [52] John Edwards, Erika Fulton, Jonathan Holmes, Joseph Valentin, David Beard, and Kevin Parker. Separation of syntax and problem solving in Introductory Computer Programming. In *IEEE International Conference on Frontiers in Education (FIE)*. IEEE, 2018.

- [53] Lloyd Griffel, Donna Delparte, and John Edwards. A machine learning approach using spectral signatures to detect potato plants infected with Potato Virus Y. *Precision Agriculture*, 2018.
- [54] DeWayne Derryberry, Ken Aho, John Edwards, and Teri Peterson. Model selection and regression t-statistics. *The American Statistician*, 0(0):1–3, 2018.
- [55] Sidharth Kumar, Duong Hoang, Steve Petruzza, Valerio Pascucci, and John Edwards. Reducing network congestion and synchronization overhead during data aggregation when writing hierarchical data. In *IEEE International Conference on High Performance Computing, Data, and Analytics*. IEEE, 2017.
- [56] Nathan Morrical and John Edwards. Parallel quadtree construction on collections of objects. *Computers and Graphics*, 66:162–168, 2017.
- [57] Boyd F Edwards and John M Edwards. Periodic nonlinear sliding modes for two uniformly magnetized spheres. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 27(5):053107, 2017.
- [58] Xin Tong, John Edwards, Chun-Ming Chen, Han-Wei Shen, Chris R Johnson, and Pak Chung Wong. View-dependent streamline deformation and exploration. *IEEE transactions on visualization and computer graphics*, 22(7):1788–1801, 2016.
- [59] John Edwards, Sidharth Kumar, and Valerio Pascucci. Big data from scientific simulations. In L. Grandinetti, G.R. Joubert, M. Kunze, and V. Pascucci, editors, *Big Data and High Performance Computing*, pages 32–46. IOS Press, Amsterdam, Berlin, Tokyo, Washington, DC, 2015.
- [60] John Edwards, Eric Daniel, Valerio Pascucci, and Chandrajit Bajaj. Approximating the Generalized Voronoi Diagram of closely spaced objects. *Computer Graphics Forum*, 34(2):299–309, 2015.
- [61] Sidharth Kumar, John Edwards, Peer-Timo Bremer, Aaron Knoll, Cameron Christensen, Venkatram Vishwanath, Philip Carns, John Schmidt, Valerio Pascucci, et al. Efficient I/O and storage of adaptive-resolution data. In *High Performance Computing, Networking, Storage and Analysis, SC14: International Conference for*, pages 413–423. IEEE, 2014.
- [62] John Edwards, Eric Daniel, Justin Kinney, Tom Bartol, Terrence Sejnowski, Daniel Johnston, Kristen Harris, and Chandrajit Bajaj. VolRoverN: Enhancing surface and volumetric reconstruction for realistic dynamical simulation of cellular and subcellular function. *Neuroinformatics*, 12(2):277–289, 2014.

- [63] John Edwards, Wenping Wang, and Chandrajit Bajaj. Surface segmentation for improved remeshing. In *Proceedings of the 21st International Meshing Roundtable*, pages 403–418. Springer, 2013.
- [64] John Edwards and Chandrajit Bajaj. Topologically correct reconstruction of tortuous contour forests. *Computer-Aided Design*, 43(10):1296–1306, 2011.
- [65] Joel Alberts, John Edwards, Josh Johnston, and Jeff Ferrin. 3D visualization for improved manipulation and mobility in EOD and combat engineering applications. In *SPIE Defense, Security, and Sensing*, page 43. International Society for Optics and Photonics, 2009.