# ZACHARI SWIECKI

## CONTACT INFORMATION


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|---|---|
| Address | Monash University<br>Faculty of IT<br>29 Ancora Imparo Way, Clayton Campus<br>Wellington Road<br>Clayton VIC 3800 |
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## ACADEMIC POSITIONS

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|---|---|
| 2021 | Lecturer, Faculty of Information Technology, Monash University |

## EDUCATION

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|---|---|
| 2020 | Ph.D. Educational Psychology, University of Wisconsin—Madison |
| 2016 | M.S. Educational Psychology, University of Wisconsin—Madison |
| 2013 | B.S., *summa cum laude*, Physics & Mathematics, University of Alabama |

## PUBLICATIONS

### PEER-REVIEWED JOURNAL ARTICLES

1. Swiecki, Z. (under review). Comparing independent and interdependent models of collaborative problem solving. Manuscript submitted to the *Journal of Learning Analytics*.
2. Martinez-Maldonado, R., Fernandez Nieto, G., Echeverria, V., Swiecki, Z., Buckingham Shum, S., & Gašević, D. *What do you mean by collaboration analytics?* Manuscript submitted to the *Journal of Learning Analytics*.
3. Swiecki, Z., Ruis, A. R., Farrell, C. & Shaffer, D. W. (2020). Assessing individual contributions to collaborative problem solving: A network analysis approach. *Computers in Human Behavior*. Volume 104, 2020, 105876, ISSN 0747-5632, https://doi.org/10.1016/j.chb.2019.01.009.
4. Swiecki, Z., Ruis, A. R., Gautam, D., Ruis, V., & Shaffer, D. W. (2019) Understanding when students are active-in-thinking through modeling-in-context. *British Journal of Educational Technology*, *50*(5), 2346-2364.
5. Markovetz, M. R., Sullivan, S., Clark, R. M., Swiecki Z., Arastoopour Irgens, G., Chesler, N. C., Shaffer, D. W., & Bodnar, C. A., (2017). A grounded qualitative analysis of the effect of a focus

group on design process in a virtual internship. *International Journal of Engineering Education*, *33*(6), 1834-1831.

6. Siebert-Evenstone, A. L., Arastoopour Irgens, G., Collier, W., Swiecki, Z., Ruis, A. R., & Shaffer, D. W. (2017). In search of conversational grain size: Modeling semantic structure using moving stanza windows. *Journal of Learning Analytics*, *4*(3), 123-139.
7. Markovetz, M.R., Clark, R.M., Swiecki, Z., Arastoopour, G., Chesler, N.C., Shaffer, D.W., & Bodnar, C.A. (2016). Influence of end customer exposure on product design within an epistemic game environment. *Advances in Engineering Education*, *6*(2), 1-22.
8. Arastoopour, G., Shaffer, D.W., Swiecki, Z., Ruis, A.R., & Chesler, N.C. (2016). Teaching and assessing engineering design thinking with virtual internships and epistemic network analysis. *International Journal of Engineering Education*, *32*(3B), 1492–1501.
9. Chesler, N.C., Ruis, A.R., Collier, W., Swiecki, Z., Arastoopour, G., & Shaffer, D.W. (2015). A novel paradigm for engineering education: Virtual internships with individualized mentoring and assessment of engineering thinking. *Journal of Biomechanical Engineering*, *137*(2).

**PEER-REVIEWED BOOK CHAPTERS**

1. Martinez-Maldonado, R., van Leeuwen, A., & Swiecki, Z. (under review). *Artificial intelligence techniques for supporting face-to-face and online collaborative learning*. Handbook of Artificial Intelligence in Education.
2. Swiecki, Z., Misfeldt, M., Stoddard, J., Shaffer, D.W. (2017). Dependency-Centered design as an approach to pedagogical authoring. In Y. Baek (Ed.), *Game-Based learning: Theory, strategies and performance Outcomes*. Hauppauge, NY: NOVA.
3. Stoddard, J., Swiecki, Z., & Shaffer, D.W. (2018). Behind the curtain: an epistemic design process for democratic media education simulations. In C. Wright-Maley (Ed.) *More like life itself: Simulations as powerful and purposeful social studies* (pp. 21-39). Charlotte, NC: Information Age Press.

**PEER-REVIEWED CONFERENCE PROCEEDINGS**

1. Fogel, A., Swiecki, Z., Marquart, C., Cai, Z., Wang, Y., Brohinsky, J., Siebart-Evenstone, A. L., Eagan, B., Ruis, A. R., & Shaffer, D. W. (in press). Directed epistemic network analysis. *International Conference on Quantitative Ethnography 2020*.
2. Bowman, D., Swiecki, Z., Cai, Z., Wang, Y., Eagan, B., Linderoth, J., & Shaffer, D.W. (in press). The mathematical foundations of epistemic network analysis. *International Conference on Quantitative Ethnography 2020*.
3. Wang, Y., Swiecki, Z., Ruis, A.R, & Shaffer, D.W. (in press). Simplification of epistemic networks using parsimonious removal with interpretive alignment. *International Conference on Quantitative Ethnography 2020*.
4. Zörgő, S., Swiecki, Z., & Ruis, A.R. (in press). Exploring the effects of segmentation semi-structured interview data with epistemic network analysis. *International Conference on Quantitative Ethnography 2020*.

   ✓ *Finalist for the Best Paper Award.*

5. Swiecki, Z. & Shaffer, D.W. (2020). iSENS: An integrated approach to combining epistemic and social network analyses. In *Proceedings of the 10th International Conference on Learning Analytics and Knowledge* (LAK '20), March 23–27, 2020, Frankfurt, Germany. ACM, New York, NY, USA, 9 pages. https://doi.org/10.1145/3375462.3375505
6. Swiecki, Z., Marquart, C., Sachar, A., Hinojosa, C., Ruis, A.R., Shaffer, D.W. (2019). Designing an interface for sharing quantitative ethnographic research data. In Eagan, B., Misfeldt, M., & Siebart-Evenstone, A.L, (Eds.) *Advances in Quantitative Ethnography: ICQE 2019*.
7. Eagan, B., Swiecki, Z., Farrell, C., & Shaffer, D. W. (2019). The binary replicate test: Determining the sensitivity of CSCL models to coding error. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, M. Baker (Eds.), *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer-Supported Collaborative Learning (CSCL) 2019, Volume 2* (pp. 328-336). Lyon, France: International Society of the Learning Sciences.
8. Swiecki, Z., Lian Z., Ruis A. R., & Shaffer, D. W. (2019). Does order matter? Investigating sequential and cotemporal models of collaboration. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, M. Baker (Eds.), *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer-Supported Collaborative Learning (CSCL) 2019, Volume 1* (pp. 112-120). Lyon, France: International Society of the Learning Sciences.

   - *Finalist for the Naomi Miyake Best Student Paper Award.*
9. Swiecki, Z., & Shaffer, D.W. (2018). Toward a taxonomy of team performance visualization tools. In J. Kay & R. Luckin (Eds.), *Rethinking Learning in the Digital Age: Making the Learning Sciences Count, 13th International Conference of the Learning Sciences (ICLS) 2018, Volume 1* (pp. 144–151). London, UK: International Society of the Learning Sciences.
10. Herder, T., Swiecki, Z., Fougt, S. S., Tamborg, A. L., Allsopp, B. B., Shaffer, D. W., & Misfeldt, M. (2018). Supporting teacher's intervention in student's virtual collaboration using a network based model. In A. Pardo, K. Bartimore, G. Lynch, S. Buckingham Shum, R. Ferguson, A. Merceron, & X. Ochoa (Eds.), *Companion Proceedings of the 8th International Conference on Learning Analytics and Knowledge* (pp. 21-25). Sydney, Australia: Society for Learning Analytics Research.
11. Gautam, D., Swiecki, Z., Shaffer, D. W., Graesser, A.C., Rus, V. (2017). Modeling Classifiers for Virtual Internships Without Participant Data. In X. Hu, T. Barnes, A. Hershkovitz, & L. Paquette (Eds.), *Proceedings of the 10th International Conference on Educational Data Mining* (pp. 278-283). Wuhan, Hubei, China: EDM Society.
12. Rus, V., Gautam, D., Swiecki, Z., Shaffer, D.W., & Graesser, A. (2016). Assessing student-generated design justifications in virtual engineering internships. In T. Barnes, M. Chi, & M. Feng (Eds.), *Proceedings of the 9th International Conference on Educational Data Mining* (pp. 496-501). Raleigh, NC: EDM Society.
13. Siebert-Evenstone, A. L., Arastoopour, G., Collier, W., Swiecki, Z., Ruis, A. R., & Shaffer, D.W. (2016). In search of conversational grain size: Modeling semantic structure using moving stanza windows. In C. K. Looi, J. Polman, U. Cress, & P. Reimann (Eds.), *Transforming Learning, Empowering Learners: The International Conference of the Learning Sciences (ICLS) 2016, Volume 2* (pp. 631-638). Singapore: International Society of the Learning Sciences.

## DOCTORAL DISSERTATION

1. Swiecki, Z. (2020). Modeling interdependence in collaborative problem-solving. Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy (Educational Psychology) at the University of Wisconsin—Madison.

#### CONFERENCE PROCEEDINGS

1. Swiecki, Z., Ruis, A. R., & Shaffer, D. W. (2019). Modeling and visualizing team performance using epistemic network analysis. In B. S. Goldberg (Ed.), *Proceedings of the 7th Annual GIFT Users Symposium (GIFTSym7)* (pp. 148-157). Orlando, Florida: U.S. Army Combat Capabilities Development Command—Solider Center.

#### SOFTWARE

1. Marquart, C. L., Hinojosa, C., Swiecki, Z., & Shaffer, D. W. (2018). Epistemic Network Analysis (Version 1.0). Retrieved from http://app.epistemicnetwork.org/login.html
2. Marquart, C., Swiecki, Z., Collier, W., Eagan, B., Woodward, R., & Shaffer, D. W. (2018). rENA: Epistemic Network Analysis (Version 0.1.5). Retrieved from https://cran.rstudio.com/web/packages/rENA/index.html
3. Marquart, C., Swiecki, Z., Eagan, B.,& Shaffer, D. W. (2018). ncodeR: Techniques for Automated Classifiers (Version 0.1.2). Retrieved from https://cran.r-project.org/web/packages/ncodeR/index.html

## PRESENTATIONS & CONFERENCES

#### INVITED PRESENTATIONS

1. Swiecki, Z. (2020, November). *Modelling Interdependence in Collaborative Problem Solving*. International Conference on Quantitative Ethnography Webinar Series.
2. Swiecki, Z., (2019, August). *Visualizing team performance: An epistemic network analysis approach*. The Eighth Annual Generalized Intelligent Framework for Tutoring (GIFT) Expert Workshop: Data Visualization and Tutoring Orlando, Florida.

#### PAPER PRESENTATIONS

*PRESENTER*

1. Swiecki, Z. (2020, Dec). *Using epistemic network analysis to model individual and team performance*. Presented at the Defense Human Sciences Symposium 2020.
2. Swiecki, Z. (2020, March). *iSENS: An integrated approach to combining epistemic and social network analyses.* Paper presented at the 10th International Analytics & Knowledge Conference, Frankfurt, Germany.
3. Swiecki, Z. (2019, June). *Does order matter? Investigating sequential and cotemporal models of collaboration*. Paper presented at the 13th International Conference on Computer-Supported Collaborative Learning, Lyon, France.

4. Swiecki, Z. (2018, June). *Toward a taxonomy of team performance visualization tools*. Paper presented at the 13th International Conference of the Learning Sciences, London, UK.

*CONTRIBUTOR*

1. Siebert-Evenstone, A.L., Swiecki, Z., Eagan, B., Brohinsky, J., Fogel, A., Want, Y., & Shaffer, D.W. (2019, October). *Zone it! A mobile application for practice- and place-based learning*. Paper presented at the Learning Sciences Graduate Student Conference, Chicago, IL.
2. Swiecki, Z., Ruis, A. R., & Shaffer, D. W. (2019, May). *Modeling and visualizing team performance using epistemic network analysis.* Paper presented at the 7th annual GIFT Users Symposium, Orlando, Florida.
3. Herder, T., Swiecki, Z., Fougt, S. S., Tamborg, A. L., Allsopp, B. B., Shaffer, D. W., & Misfeldt, M. (June, 2018). *Supporting teacher's intervention in student's virtual collaboration using a network based model*. Paper presented at the 8th International Conference on Learning Analytics and Knowledge, Sydney, Australia.
4. Markovetz, M., Clark, R., Arastoopour, G., Swiecki, Z., Chesler, N. C., Bodnar, C. A. (2016, June). *Innovative design within the context of virtual internships: How can it be defined and how is it related to the student design process?* Paper presented at the 123rd ASEE Annual Conference & Exposition, New Orleans, LA.
5. Arastoopour, G., Swiecki, Z., Chesler, N.C., & Shaffer, D.W. (2015, July). *Epistemic network analysis as a tool for engineering design assessment.* Paper presented at the 122nd ASEE Annual Conference and Exposition, Seattle, WA.
6. Arastoopour, G., Shaffer, D.W., Swiecki, Z., Ruis, A.R., & Chesler, N.C. (2015, June). *Teaching and Assessing Engineering Design Thinking with Virtual Internships and Epistemic Network Analysis.* Paper presented at the Harvey Mudd Design Workshop, Claremont, CA.

**WORKSHOPS CO-ORGANIZED**

1. Swiecki, Z., Marquart, C., & Joksimović, S. (2020, January). *Advanced ENA and rENA*. Workshop hosted by the 2nd International Conference on Quantitative Ethnography (ICQE 20).
2. Swiecki, Z., Marquart, C., & Joksimović, S. (2019, October). *Advanced epistemic network analysis workshop*. Workshop hosted by the First International Conference on Quantitative Ethnography Madison, WI.
3. Siebert-Evenstone, A., Eagan, B., Swiecki, Z., Lee, S., & Hamilton, E. (2019, June). *Creating, refining, and validating automated discourse codes: An introduction to nCoder and rho*. Workshop hosted by the 13th International Conference on Computer-Supported Collaborative Learning (CSCL) Lyon, France.
4. Siebert-Evenstone, A., Swiecki, Z., Eagan, B., Sung, H., & Shaffer, D. W. (2018, October). *Developing and validating automated discourse codes: An introduction to nCodeR*. Workshop hosted by the Learning Sciences Graduate Student Conference (LSGS) Nashville, TN.
5. Eagan, B., Siebert-Evenstone, A., Swiecki, Z., Marquart, C., & Shaffer, D. W. (2018, July). *Quantitative ethnography workshop*. Workshop hosted by the Wisconsin Center for Education for Education Research (WCER) and the Epistemic Analytics Lab Madison, WI.

6. Eagan, B., Swiecki, Z., Mochizuki, T., Joksimović, S., Marquart, C., & Misfeldt, M. (2018, June). *Quantitative ethnography workshop: Applying the tools of quantitative ethnography to your data*. Workshop hosted by the 13th International Conference of the Learning Sciences (ICLS) London, UK.
7. Eagan, B., Swiecki, Z., Siebert-Evenstone, A., Herder, T., Sung, H., & Shaffer, D. W. (2017, October). *Quantitative ethnography in R: An introduction to rhoR and R-ENA workshop*. Workshop hosted by the Learning Sciences Graduate Students Conference (LSGS) Bloomington, Indiana.
8. Eagan, B., Swiecki, Z., Arastoopour, G., & Shaffer, D. W. *Epistemic network analysis (ENA) workshop*. (2016, October). Workshop hosted by the Learning Sciences Graduate Students Conference (LSGS) Chicago, Illinois.

**POSTER PRESENTATIONS**

*PRESENTER*

1. Swiecki, Z. (2019, October). *Designing an interface for sharing quantitative ethnographic research data*. Poster presented at the First Annual International Conference on Quantitative Ethnography Madison, WI.

*CONTRIBUTOR*

1. Swiecki, Z., Ruis, V., Cai, Z., Gautam, D., & Shaffer, D. W. (2018, May). *Comparing general and domain-specific LSA classifiers in the context of virtual internships.* Poster presented at the 31st International FLAIRS Conference Melbourne, Florida.
2. Swiecki, Z., Gautam, D., Rus, V., Shaffer, D. W., & Graesser, A. C. (2017, July). *Automated classifiers for virtual internships without participant data.* Poster presented at the 28th Annual Meeting of the Society for Text & Discourse Brighton, UK.

## RESEARCH

| | |
|---|---|
| 2021– | Leading Virtual Learning Teacher Course, Monash University |
| 2018–2020 | Assessment of the Readiness of Teams, Epistemic Analytics Lab, University of Wisconsin, Madison |
| 2017–2020 | Epistemic Network Analysis, Epistemic Analytics Lab, University of Wisconsin—Madison |
| 2014–2017 | Virtual Internship Authoring, Epistemic Analytics Lab, University of Wisconsin—Madison |
| 2013–2015 | Virtual Internships, Epistemic Analytics Lab, University of Wisconsin—Madison |

## TEACHING

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| 2019 | Guest Lecturer, Research Experience in Educational Psychology, University of Wisconsin—Madison |
| 2018, 2019 | Guest Lecturer, Current Topics in the Learning Sciences, University of Wisconsin—Madison |
| 2018 | Instructor, Human Abilities and Learning, University of Wisconsin—Madison |
| 2016, 2017 | Teaching Assistant, Human Abilities and Learning, University of Wisconsin—Madison |

## HONORS & AWARDS

| | |
|---|---|
| 2019 | Doctoral Consortium, International Conference on Computer-Supported Collaborative Learning |
| 2015 | CADRE Fellow, CADRE Fellows Program |
| 2012 | B.B. Comer Math Prize, University of Alabama |
| 2008 | Smith Scholar, Smith Scholarship Foundation |
| 2008 | Coca-Cola Scholar, Coca-Cola Scholars Program |

## SERVICE

### PROGRAM COMMITTEE MEMBER

International Conference on Quantitative Ethnography (ICQE21)

Learning Analytics and Knowledge Conference (LAK21)

FLAIRS-33 Intelligent Learning Technologies

### AD-HOC REVIEWER

British Journal of Educational Technology

Computers in Human Behavior

Frontiers in Psychology

Journal of the Learning Sciences

Journal of Learning Analytics

International Conference on Computer-Supported Collaborative Learning

International Conference of the Florida Artificial Intelligence Research Society

International Conference of the Learning Sciences

International Conference on Quantitative Ethnography

Learning Analytics and Knowledge Conference

Learning Sciences Graduate Student Conference

Nova Science Publishers

**REFERENCES**

David Williamson Shaffer, University of Wisconsin—Madison
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