

Victoria [Docherty] Delaney

Assistant Professor of Data Science and Statistics Education
Department of Mathematics and Statistics
San Diego State University

EDUCATION

- Ph.D. Stanford University, Graduate School of Education** 9/2024
Learning Sciences and Technology Design
Curriculum and Teacher Education: Mathematics Education
Education Data Science
Dissertation Title: “*The Mathematics of Facial Recognition: Statistics Teachers’ Adaptations of a Machine Learning Curriculum*”
Committee Members: Hilda Borko (advisor), Victor R. Lee, Denise Clark Pope, Sarah Levine, Mykel Kochendefter (chair)
- M.S. Stanford University, School of Computer Science** 9/2022
Artificial Intelligence
Advised by Douglas James
- M.Ed Lehigh University, College of Education** 8/2014
Urban Principals Academy at Lehigh (U*PAL)
Advised by Jon Drescher
- B.S. Carnegie Mellon University, Tepper School of Business** 6/2011
Double Major: Business Administration and Statistics

PROFESSIONAL EXPERIENCE

- Assistant Professor of Statistics and Data Science Education** 8/2024 - present
San Diego State University
- Apple, Inc.** 03 - 09/2023
Machine Intelligence and Learning Sciences Research Intern
Mentored by Jennifer King Chen and R. Benjamin Shapiro

PEER-REVIEWED PUBLICATIONS

Journal Articles

- Delaney, V.** & Chen, J. J. (under review). A Scoping Study of Parents’ Roles and Strategies in Children’s AI Use. *Journal of Research in Childhood Education*.
- Chen, J. J. & **Delaney, V.** (under review). Leveraging Artificial Intelligence: Equity and Ethical Considerations, and Policy Recommendations for Education Leaders and Teachers. *Early Childhood Education Journal*.
- King Chen, J., **Delaney, V.**, Tseng, T., Kerry, M. B., Findlater, L., & Shapiro, R. B. (under review). Learning through Machine Teaching: An Inquiry and Sensemaking Framework for ML Modeling. *Journal of the Learning Sciences*.
- Delaney, V.**, & Lee, V. R. (2024). High school teachers’ data set aesthetics. *Information and Learning Sciences*. (ahead-of-print)
- Tseng, T., Davidson, M. J., Morales-Navarro, L., Chen, J. K., **Delaney, V.**, Leibowitz, M., Beason, J., & Shapiro, R. B.

(2024). CO-ML: Collaborative Machine Learning Model Building for Developing Dataset Design Practices. *ACM Transactions on Computing Education*, 24(2), 1–37. [Link to Paper](#).

Jarry-Shore, M., **Delaney, V.**, & Borko, H. (2023). Sustaining at Scale: District Mathematics Specialists' Adaptations to a Teacher Leadership Preparation Program. *Investigations in Mathematics Learning*, 15(1), 67-84. [Link to Paper](#).

Lee, V. R., & **Delaney, V.** (2022). Identifying the content, lesson structure, and data use within pre-collegiate data science curricula. *Journal of Science Education and Technology*, 31, 81-98. [Link to Paper](#).

Borko, H., Carlson, J., Deutscher, R., Boles, K., **Delaney, V.**, Fong, A. B., Jarry-Shore, M., Malamut, J., Million, S., Jones, S. M., & Villa, A. M. (2021). Learning to Lead: An Approach to Mathematics Teacher Development. *International Journal of Science and Mathematics Education*, 1-23. [Link to Paper](#).

Book Chapters

Pea, R., Biernacki, P., Bigman, M, Boles, K., Coelho, R., **Docherty, V.**, Garcia, J., Lin, V., Nguyen, J., Pimentel, D., Pozos, R., Reynante, B., Roy, E., Southerton, E., Suzara, M., Vishwanath, A. (2023). Four surveillance technologies and challenges for education. In Niemi, H., Pea, R., & Lu, Y. (2023). (Eds.). *AI in Learning: Designing the Future*. Springer Nature.

Published Conference Proceedings

Delaney, V. & Selbach-Allen, M. (under review). Teaching Machine Learning as Adaptive Design Work. *Submitted to the 19th International Conference of the Learning Sciences-ICLS*. Helsinki, Finland.

Selbach-Allen, M. & **Delaney, V.** (accepted paper). Enacting Care in a Community College Math Classroom: A Case Study. *Research on Undergraduate Mathematics Education conference*.

Delaney, V. & Selbach-Allen, M. (accepted paper). Exploring undergraduate mathematics students' math identities using sentiment analysis: Affordances and precautions. *Research on Undergraduate Mathematics Education conference*.

Delaney, V., & Selbach-Allen, M. (accepted paper). "What's the issue with giving away data?" Challenges in Building Critical Consciousness in Facial Recognition. *Data Science Education in K-12 Inaugural Conference*.

Kafai, Y. B., Proctor, C., **Delaney, V.**, DesPortes, K., Hoadley, C., Lee, V. R., Roberts, J., Shapiro, R. B., Tseng, T., & Rose, C. (2024). What does it mean to be literate in the time of AI? Different Perspectives on Learning and Teaching AI Literacies in K-12 Education. In *Proceedings of the 18th International Conference of the Learning Sciences-ICLS*. Buffalo, NY, U.S.A: International Society of the Learning Sciences.

Delaney, V., Dobervich, D., Sieh, I., & Selbach-Allen, M. (2024). Math of Facial Recognition: Co-design of a machine learning and statistics integrated curriculum for high school. In *Proceedings of the 18th International Conference of the Learning Sciences-ICLS*. Buffalo, NY, U.S.A: International Society of the Learning Sciences.

Xie, B., Sarin, P., Wolf, J., Garcia, R., **Delaney, V.**, Sieh, I., Fuloria, A., Dennison, D., Bywater, C., & Lee, V. R. (2024). Co-designing AI Education Curriculum with Cross-Disciplinary High School Teachers. In *Proceedings of the 38th Annual Meeting of the Symposium of Educational Advances in Artificial Intelligence*. [Link to Paper](#).

Delaney, V., Sarin, P., & Lee, V. R. (2023). Students' constructed explanations for how artificial intelligence generates recommendations in YouTube. In *Proceedings of the 17th International Conference of the Learning Sciences-ICLS*, pp. 1186-1189. Montreal, Canada: International Society of the Learning Sciences. [Link to Paper](#).

Delaney, V., & Lee, V. R. (2022) "With statistics, that's supposed to take bias away": Divergent teacher views on

engaging students with race in data sets. In *Proceedings of the 16th International Conference of the Learning Sciences-ICLS 2022*, pp. 1401-1404. Hiroshima, Japan: International Society of the Learning Sciences. [Link to Paper](#).

Lee, V. R., **Delaney, V.**, & Sarin, P. (2022). Eliciting High School Students' Conceptions and Intuitions about Algorithmic Bias. In *Proceedings of the 2022 ACM Conference on International Computing Education Research-Volume 2* (pp. 35-36). [Link to Paper](#).

Delaney, V. (2022) The Teacher's Role in Sustaining Cognitive Demand with Desmos. In *Proceedings of the 44th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, pp. 1978-1982. [Link to Paper](#).

Delaney, V. & Kinsey, G. (2021). Sustaining Cognitive Demand with Desmos Technology. In *Proceedings of the 43rd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, pp. 1764-1768. [Link to Paper](#).

Delaney, V. & Bhatia, J. (2021). Classification in math class: Using convolutional neural networks to categorize student cognitive demand. In *CEUR-WS Workshop Proceedings, co-located with the 16th European Conference on Technology-Enhanced Learning, Vol. 3042*. [Link to Paper](#).

Lee, V. R., & **Delaney, V.** (2021). Aesthetics of Authenticity for Teachers' Data Set Preferences. In de Vries, E., Hod, Y., & Ahn, J. (Eds.), *Proceedings of the 15th International Conference of the Learning Sciences-ICLS*, pp. 259-266. Bochum, Germany: International Society of the Learning Sciences. [Link to Paper](#).

Peer-Reviewed Conference Papers

Delaney, V., Mah, C., & Lee, V. R. (accepted poster). High school teachers' emergent AI literacy goals during professional learning about lesson co-design. *2025 Annual Meeting of the American Educational Research Association*.

Hsieh, H., & **Delaney, V.** (2023). Predicting the Constructiveness of Student-Student Classroom Conversations: An Exploratory Study on Uptake. Paper presented at the 2023 Annual Meeting of the American Educational Research Association. [Link to Paper](#).

Kang, E., Kim, S., Porter, S., Torres, T., **Delaney, V.** (2023). "AI is computers that have brains and are running everything!" Expert-Novice Conceptions of Artificial Intelligence, Machine Learning, and Mathematics. Paper presented at the 2023 Annual Meeting of the American Educational Research Association. [Link to Paper](#).

Kang, E., Kim, S., Porter, S., Torres, T., **Delaney, V.** (2022). Exploring Secondary School Students' Perceptions of Mathematics within Artificial Intelligence Applications. Paper presented at the 2022 Learning Sciences Graduate Student Conference. [Link to Paper](#).

Delaney, V. & Kinsey, G (2022). Does Desmos Drive Cognitive Demand? A Study of Digital Technology Use in Middle School Mathematics. Paper presented at the 2022 Annual Meeting of the American Educational Research Association [Link to Paper](#).

Delaney, V. (2021). Classification in Math Class: Using Computer Vision to Detect Cognitive Demand in Students' Groupwork. Paper presented at the 2021 Learning Sciences Graduate Student Conference. [Link to Paper](#).

Lee, V. R., & **Delaney, V.** (2021). What Is Being Covered in Standalone Secondary School Data Science Curricula? Paper presented at the 2021 Annual Meeting of the American Educational Research Association. [Link to Paper](#).

INVITED TALKS, WORKSHOPS, and PANELS

The CRAFT PD stuff from last year

The Panel at foothill college with Chris.
The CRMSE thing

Teaching with AI: What do we do now? Center for Research on Math and Science Education (CRMSE) Colloquium.
September 2024.

Speaking at SWAYWO
The AI CIRCLS thing July 2024
Those videos that I did with Julie online for CRAFT (what's the title?)

MEDIA

Delaney, V. & Chen, J. J. (accepted paper). Developmental Considerations and Practical Recommendations for Parents and Early Childhood Educators in the Age of AI. *Stanford Graduate School of Education, Public Scholarship Collective*.

Delaney, V. (2022). "Postpartum in the Academy, and What I've Learned from It." *Inside Higher Ed*, May 12, 2022.
[Link to Op-Ed](#)

RESEARCH FUNDING

Pending Funding

National Science Foundation, Division of Undergraduate Education
Improving Undergraduate STEM Education (IUSE) Level 1
Collaborative Research: *CTFSci: Advancing Scientific Rigor in Cybersecurity Capture the Flag Pedagogy and Instructional Design*
Principle Investigators: **Victoria Delaney**, Robert Beverly, Mark Gondree
Proposed funding: \$400,000
Proposed duration: August 2025 - July 2027

Awarded Funding

San Diego State University, Seed Grant program
Can Students Struggle Productively on Mathematics Tasks with Generative AI?
Principle Investigator: **Victoria Delaney**
Funding: \$7,250
Duration: January - December 2025

Stanford University, Amir Lopatin Fellowship
Co-designing a teacher-student empathy tool: Bridging technological, cultural, and social-emotional divides
Principle Investigators: Victoria Delaney and Paulina Biernacki
Funding: \$5,884
Duration: January 2021 - February 2022

Funding Supported

Stanford University, Seed Grant program
Learner-AI Collaboration in Education: Enhancing Creative Problem-Solving through GenAI
Principle Investigator: 'Joba Adisa
Funding: \$4,628
Duration: February 2025 - March 2026

TEACHING

San Diego State University

STAT 410: Python Programming and Data Science	2025
MATH 414: Mathematics Curriculum and Instruction	2025
MTHED 606: Selected Topics in 7-14 Mathematics Curriculum	2024

Stanford Teaching Assistantships

EDUC 229A-D: Learning, Design, and Technology Seminar	2022 – 2024
EDUC 208b: Curriculum Construction	2024
CS 347: Human-Computer Interaction: Foundations and Frontiers	2023
EDUC 424: Introduction to Research in Curriculum and Teacher Education	2022
EDUC 400b: Statistical Analysis in Education: Regression	2021
EDUC 200a: Introduction to Data Analysis and Interpretation	2021
EDUC 291: Learning Sciences and Technology Design Colloquium	2021
EDUC 281: Technology for Learners	2020
EDUC 352a: Introduction to Research-Practice Partnerships	2020

K-12 Teaching Experience

Introduction to Artificial Intelligence (online/remote, Inspirit AI)	2021
AP Calculus AB/BC, AP Statistics, and Robotics Teacher (Summit Public Schools)	2015 – 2018
AP Statistics and Algebra Teacher (Forrest City School District)	2011 – 2014

SERVICE TO THE PROFESSION

Peer Review - Journals

Educational Technology & Society
Harvard Data Science Review
Information and Learning Sciences
Investigations in Mathematics Learning
Journal of Statistics and Data Science Education
Transactions on Computer-Human Interaction
Transactions on Computing Education
Journal of Computing in Higher Education
Journal of Research in Childhood Education

Peer Review - Conferences

American Educational Research Association
International Conference of the Learning Sciences
Conference on Research in Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT)
North American Chapter of the International Group for the Psychology of Mathematics Education
Learning Sciences Graduate Student Conference

UNIVERSITY SERVICE - San Diego State University

Teaching Excellence Committee, Peer Observations	2024
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UNIVERSITY SERVICE - Stanford University

Project Mentor , Stanford STHEM	2022
Technical Support and Programming Instructor , Stanford Graduate School of Education IT	2021 – 2022
Dissertation Support Grant Selection Committee , Dissertation Support Grant Funding	2021 – 2022
Co-Chair , Mathematics Education Research Group (MERGe)	2019 – 2021
Student Planning Committee , SWAYWO (So, What Are You Working On?) Conference	2020 – 2022
Student Representative , Learning Sciences and Technology Design	2020 – 2023
Digital Ambassador , Graduate School of Education IT department	2019 – 2022
Co-Chair , Graduate School of Education Mentorships Program	2020 – 2022

HONORS and AWARDS

Human-Centered Artificial Intelligence (HAI) Graduate Fellowship	2021– 2022
Stanford Community Impact Award	2020, 2022
IGNITED Fellowship, Stanford Intelligent Systems Laboratory (SISL)	2017

PROFESSIONAL AFFILIATIONS

American Educational Research Association (AERA)
 International Society of the Learning Sciences (ISLS)
 National Council of Teachers of Mathematics (NCTM)
 Association for Computing Machinery (ACM)

LANGUAGES

Fluent: Python (incl. Tensorflow/Keras, PyTorch, SciKitLearn, Pandas, NumPy, Matplotlib, Seaborn), R
Proficient: C++, C, Julia, Stata