Christopher J. MacLellan

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Education

Carnegie Mellon University, M.S./Ph.D. in Human-Computer Interaction, 2017.
Advisor: Ken Koedinger
Committee: Vincent Aleven, Pat Langley, and John Anderson
Arizona State University, Ph.D. Student in Computer Science, 2010-2012.
Advisor: Pat Langley, *Concentration*: Artificial Intelligence
(Transferred to Carnegie Mellon University August 2012)
University of Wyoming, B.S. in Computer Science and Mathematics, 2010.
Honors: Most Outstanding 2010 Graduate, Cum Laude.

Employment

Georgia Institute of Technology, Atlanta, GA
Assistant Professor, School of Interactive Computing, 2022-Present
Drexel University, Philadelpha, PA
Affiliated Appointment, Computer Science, 2021-2022
Assistant Professor, Information Science, 2020-2022
Soar Technology, Inc., Ann Arbor, MI
Lead Scientist, Autonomous Systems, 2019-2020
Research Scientist, Autonomous Systems, 2017-2019

Grants and Contracts

Georgia Institute of Technology

National Science Foundation (NSF), VITAL Prize: Apprentice Tutors: A User-Friendly Platform for Building Personalized and Inclusive AI Tutors, $20,000 (semi-final prize), August 2023 - November 2023. (PI)

Army Research Labs (ARL), Building Adaptable Machine Teammates with Human-Like Learning for Augmented Human-Machine Symbiosis, $100,000, May 2023 - April 2024. (PI)

National Science Foundation (NSF), AI Institute for Adult Learning and Online Education (ALOE), Award #2112532, $19,990,448 (MacLellan: $907,914), November 2021 - October 2026. (Key Personnel; Institute PI Ashok Goel)

Defense Advanced Research Projects Agency (DARPA), SPARTACUS-X: Sparse Coding and Extraction of Ultrasound Knowledge for Explainable POCUS AI, $999,999 (MacLellan: $35,429), August 2022 - June 2023. (PI with Co-PIs Rosina Weber and Edward Kim)

Army Research Labs (ARL), The Co-evolution of Human-AI Adaptation, $1,499,994 (MacLellan:

$374,998), May 2022 - April 2025. (Georgia Tech PI; PI Ying Wu)

Army Research Labs (ARL), Human-Guided ML for Futuristic Human-Machine Teaming, $1,499,994 (MacLellan: $228,557), August 2022 - January 2024. (PI with Co-PIs Erik Harpstead and Joe Austerweil)

Drexel University

Army Research Labs (ARL), The Coevolution of Human-AI Adaptation, $1,499,994 (MacLellan: $374,998), December 2021 - December 2024. (Drexel PI; PI Ying Wu)

Army Research Labs (ARL), Human-Guided ML for Futuristic Human-Machine Teaming, $1,499,994, December 2021 - December 2024. (PI with Co-PIs Erik Harpstead and Joe Austerweil)

National Science Foundation (NSF), AI Institute for Adult Learning and Online Education (ALOE), Award #2112532, $19,990,448 (MacLellan: $944,885) , November 2021 - October 2026. (Drexel PI; Institute PI Myk Garn; Institute Director Ashok Goel)

Defense Advanced Research Projects Agency (DARPA), SPARTACUS-X: Sparse Coding and Extraction of Ultrasound Knowledge for Explainable POCUS AI, $999,999, May 2021 - October 2022. (PI with Co-PIs Rosina Weber and Edward Kim)

Army Research Labs (ARL), Teachable Agent Capabilities for Teaming (TACT), $99,999, April 2021 - April 2022. (PI)

Defense Advanced Research Projects Agency (DARPA), ATTUNE: Predicting Effects of HPO Interventions with Socio-Cognitive Agents that Leverage Individual Residuals, HR00111990055, $41,999, Aug 2020 - May 2021. (Drexel PI; PI Wohleber)

Soar Technology, Inc.

Defense Advanced Research Projects Agency (DARPA), Bias in Online Communication Activity, $499,654, May 2019 - May 2020. (PI, Original PI C. Tenison)

Defense Advanced Research Projects Agency (DARPA), Rapid Configuration of Heterogeneous Models, $499,888, June 2019 - June 2020. (PI, Original PI C. Tenison)

Defense Advanced Research Projects Agency (DARPA), Fixed-Wing Autonomous Synthetic Pilot for AlphaDogFight, $599,706, September 2019 - March 2020. (Co-PI with Randy Jones)

Defense Advanced Research Projects Agency (DARPA), ATTUNE: Predicting Effects of HPO Interventions with Socio-Cognitive Agents that Leverage Individual Residuals, HR00111990055, $996,749, July 2019 - April 2020. (PI)

Office of Naval Research (ONR), MineApprentice: Learning Performance Models and Tactical Knowledge for Continuous Mission Planning, N68335-18-C-0401, $124,865, May 2018 - November 2018. (PI)

Soar Technology, Apprentice: An Architecture for Building Agents that Learn from Natural Training Interactions, Internal Research and Development (IRAD), $60,275, April, 2018 - January, 2019. (PI)

Carnegie Mellon University

National Science Foundation (NSF), Conference: A Proposal to the National Science Foundation for Support of the Seventh Annual Inter-Science of Learning Centers (iSLC) Student / Postdoctoral Scholar Conference, Award Number SMA-1430662, $99,999, April 2014 - March 2016. (Lead writer and conference co-chair with C. Tenison, PI K. Koedinger)

Honors and Awards

Faculty Research Excellence Award, Drexel University, 2022.
New and Future AI Educator Award, AAAI/ACM SIGAI, 2022.
Named on RealLIST of technologists building Philadelphia's future, Technical.ly, 2021.
Post Doctoral Research Fellowship (declined), National Research Council, 2017.
Exemplary Paper Award, Educational Data Mining, 2016.
Program for Interdisciplinary Education Research Fellowship, Carnegie Mellon University, 2012-2015.
Conference Travel Grants, ACS 2016, NSF 2015, ACM 2015, AAAI 2011.
Fulton Fellowship, Arizona State University, 2010-2011.
Deans Fellowship Award, Arizona State University, 2010-2014.
Space Grant Fellowship, University of Wyoming, 2010.
Most Outstanding 2010 Graduate Award, University of Wyoming, 2010.
College of Engineering Excellent Academic Achievement Award, University of Wyoming, 2007-2009.
NASA Space Grant, NASA Jet Propulsion Laboratory, 2009.
Arts and Sciences Board of Visitors Student Service Award, University of Wyoming, 2008.
Arts and Sciences Catherine Gibbs Shaw Award, University of Wyoming, 2008.
Summer EPSCoR Research Fellowship, University of Wyoming, 2008.
Spring EPSCoR Research Fellowship, University of Wyoming, 2008.
Undergraduate Research Fellowship, National Science Foundation, 2007–2008.

Research

Journal Publications

J8 **MacLellan, C.J.**, Stowers, K., Brady, L. (2023). Evaluating Alternative Training Interventions Using Personalized Computational Models of Learning. *Advances in Cognitive Systems*, 10, 1-18.

J7 Stowers, K., Brady, L., **MacLellan, C.J.**, Wohleber, R., Salas, R. (2021). Improving Teamwork Competencies in Human-Machine Teams: Perspectives from Team Science. Frontiers in Psychology.

J6 **MacLellan, C.J.**, Koedinger, K.R. (2020). Domain General Tutor Authoring with Apprentice Learner Models. *International Journal of AI in Education*. doi: 10.1007/s40593-020-00214-2

J5 **MacLellan, C.J.**, Harpstead, E., Marinier III, R. P., Koedinger, K.R. (2018). A Framework for Natural Cognitive System Training Interactions. *Advances in Cognitive Systems*, 6, 177-192.

J4 **MacLellan, C.J.**, Harpstead, E., Aleven, V. Koedinger, K.R. (2016). TRESTLE: A Model of Concept Formation in Structured Domains. *Advances in Cognitive Systems*, 4, 131-150.

J3 Unger, L., Fisher, A. V., Nugent, R., Ventura, S. L., **MacLellan, C.J.** (2016). Developmental Changes in the Semantic Organization. *Journal of Experimental Child Psychology*, 146. doi: 10.1016/j.jecp.2016.01.005

J2 Dinar, M., Danielescu, A., **MacLellan, C.J.**, Shah, J., Langley, P. (2015). Problem Map: An ontological framework for a computational study of problem formulation in engineering design. *Journal of Computing and Information Science in Engineering*, 15(3). doi: 10.1115/1.4030076

J1 **MacLellan, C.J.**, Langley, P., Shah, J., Dinar, M. (2013). A Computational Aid for Problem Formulation in Early Conceptual Design. *Journal of Computing and Information Science in Engineering*,13(3). doi: 10.1115/1.4024714

Peer-Reviewed Conference Publications[1]

C22 Harpstead, E., Stowers, K., Lawley, L., Zhang, Q., **MacLellan, C.J.** (2023). Speculative Game Design of Asymmetric Cooperative Games to Study Human-Machine Teaming. In *Proceedings of The First Workshop on Human-AI Interaction through Play @ The Foundations of Digital Games 2023 (FDG 2023)*.

C21 Hannan, D., Nesbit, S.C., Wen, X., Smith, G., Zhang, Q., Goffi, A., Chan, V., Morris, M.J., Hunninghake, J.C., Villalobos, N.E., Kim, E., Weber, R.O., **MacLellan, C.J.** (2023). MobilePTX: Sparse Coding for Pneumothorax Detection Given Limited Training Examples. In Proceedings of the Thirty-Fifth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-23).

C20 **MacLellan, C.J.**, Matsakis, P., Langley, P. (2022). Efficient Induction of Language Models via Probabilistic Concept Formation. In Proceedings of the Tenth Annual Conference on Advances in Cognitive Systems.

C19 Guerzhoy, M., Neumann, M., Johnson, E., Johnson, D., Chai, H., Garijo, D., Lyu, Z., **MacLellan, C.J.** (2022) EAAI-22 Blue Sky Ideas in Artificial Intelligence Education from the AAAI/ACM SIGAI New and Future AI Educator Program. AI Matters, 8(2), 16-21.

C18 **MacLellan, C.J.**, Gupta, A. (2021). Learning Expert Models for Educationally Relevant Tasks using Reinforcement Learning. In *Proceedings of the 14th International Conference on Educational Data Mining.* International Educational Data Mining Society.

C17 Zhang, Q., **MacLellan, C.J.** (2021). Going Online: A simulated student approach for evaluating knowledge tracing in the context of mastery learning. In *Proceedings of the 14th International Conference on Educational Data Mining.* International Educational Data Mining Society.

C16 **MacLellan, C.J.**, Stowers, K., Brady, L. (2020). Optimizing Human Performance using Individualized Computational Models of Learning. In *Proceedings of the Eighth Annual Conference on Advances in Cognitive Systems.*

C15 Harpstead, E., **MacLellan, C.J.**, Weitekamp, D., Koedinger, K. (2019). The Use of Simulated Learners in Adaptive Education. In *Proceedings of the 3rd International Conference on Artificial Intelligence + Adaptive Education (AIAED)*.

C14 Weitekamp, D., Harpstead, E., Rachatasumrit, N., **MacLellan, C. J.**, Koedinger, K. (2019). Toward Near Zero-Parameter Prediction Using a Computational Model of Student Learning. In *Proceedings of the 12th International Conference on Educational Data Mining.* Montreal: International Educational Data Mining Society.

C13 Chaplot, D. S., **MacLellan, C.J.**, Salakhutdinov, R., Koedinger, K. (2018). Learning Cognitive Models using Neural Networks. In *Proceedings of the 19th International Conference on Artificial Intelligence in Education.*

C12 **MacLellan, C.J.**, Harpstead, E., Patel, R., Koedinger, K.R. (2016). The Apprentice Learner Architecture: Closing the loop between learning theory and educational data. In *Proceedings of the 9th International Conference on Educational Data Mining*. (Winner of Exemplary Paper Award).

C11 **MacLellan, C.J.**, Koedinger, K.R., Dow, S.P. (2015). Assessing the Creativity of Designs at Scale. In E. Y. Do (Ed.), *Proceedings of the 2015 ACM SIGCHI Conference on Creativity and*

[1]Student, post-doctoral, and fellow co-authors mentored by MacLellan for the subject publications are underlined

Cognition (pp. 339-340). New York: ACM Press. doi: 10.1145/2757226.2764770

C10 **MacLellan, C.J.**, Harpstead, E., Aleven, V., Koedinger, K.R. (2015). TRESTLE: Incremental Learning in Structured Domains using Partial Matching and Categorization. In *Proceedings of the Third Annual Conference on Advances in Cognitive Systems*. Atlanta, GA: Cognitive Systems Foundation.

C9 **MacLellan, C.J.**, Liu, R., Koedinger, K.R. (2015). Accounting for Slipping and Other False Negatives in Logistic Models of Student Learning. In O.C. Santos et al. (Eds.), *Proceedings of the 8th International Conference on Educational Data Mining*. Madrid, Spain: International Educational Data Mining Society.

C8 **MacLellan, C.J.**, Koedinger, K.R., Matsuda, N. (2014). Authoring Tutors with SimStudent: An Evaluation of Efficiency and Model Quality. In S. Trausan-Matu, K. E. Boyer, M. Crosby, K. Panourgia (Eds.), *Proceedings of the 12th International Conference on Intelligent Tutoring Systems* (pp. 551-560). Switzerland: Springer International. doi: 10.1007/978-3-319-07221-0

C7 Harpstead, E., **MacLellan, C.J.**, Aleven, V., Myers, B.A. (2014) Using Extracted Features to Inform Alignment-Driven Design Ideas in an Educational Game. In A. Schmidt, T. Grossman (Eds.), *Proceedings of the 32nd Annual SIGCHI Conference on Human Factors in Computing Systems - CHI '14* (pp. 3329-3338). New York: ACM Press. doi: 10.1145/2556288.2557393

C6 Tenison, C., **MacLellan, C.J.** (2014). Modeling Strategy Use in an Intelligent Tutoring System: Implications for Strategic Flexibility. In S. Trausan-Matu, K. E. Boyer, M. Crosby, K. Panourgia (Eds.), *Proceedings of the 12th International Conference on Intelligent Tutoring Systems* (pp. 466-475). Switzerland: Springer International. doi: 10.1007/978-3-319-07221-0

C5 Unger, L., Fisher, A. V., **MacLellan, C.J.** (2014). Developmental Changes in the Semantic Organization of Living Kinds. In P. Bello, M. Guarini, M. McShane, B. Scassellati (Eds.), *Proceedings of the 36th Annual Meeting of the Cognitive Science Society* (pp. 1646-1651). Quebec City: Cognitive Science Society.

C4 Harpstead, E., **MacLellan, C.J.**, Koedinger, K.R., Aleven, V., Dow, S.P., Myers, B.A. (2013). Investigating the Solution Space of an Open-Ended Educational Game Using Conceptual Feature Extraction. In S.K. D'Mello, R.A. Calvo, A. Olney (Eds.), *Proceedings of the 6th International Conference on Educational Data Mining* (pp. 51-58). Memphis, TN: International Educational Data Mining Society

C3 Danielescu, A., Dinar, M., **MacLellan, C.J.**, Shah, J., Langley, P. (2012). The structure of creative design: what problem maps can tell us about problem formulation and creative designers. *Proceedings of the ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (pp. 437-446). Chicago, Illinois: ASME. doi: 10.1115/DETC2012-70325

C2 Dinar, M., **MacLellan, C.J.**, Danielescu, A., Shah, J. (2012). Beyond Function-Behavior-Structure. In J. Gero (Ed.), *Design Computing and Cognition '12* (pp. 511-527). Netherlands: Springer. doi: 10.1007/978-94-017-9112-0

C1 Wiederrecht, M., **MacLellan, C.J.**, Gamboa, R. (2010). Reasoning about DrScheme Programs in ACL2. In R. Page, Z. Horvath, V. Zsók (Eds.), *Trends in Functional Programming* (pp. 276-283). Berlin: Springer-Verlag. doi: 10.1007/978-3-642-22941-1

Book Chapters

B1 Harpstead, E. , **MacLellan, C.J.**, Aleven, V., Myers, B. A. (2015). Replay analysis in open-ended educational games. In C. S. Loh, Y. Sheng, and D. Ifenthaler (Eds.), *Serious Game Analytics:*

Methodologies for Performance Measurement, Assessment, and Improvement, 381-399. Switzerland: Springer International. doi: 10.1007/978-3-319-05834-4_17

Symposia and Workshop Papers

W17 Smith, G., Zhang, Q., **MacLellan, C.J.**. (2022) Do it Like the Doctor: How We Can Design a Model That Uses Domain Knowledge to Diagnose Pneumothorax. In *Proceedings of the AAAI Spring Symposium on Machine Learning and Knowledge Engineering for Hybrid Intelligence*.

W16 Zhang, Q.,**MacLellan, C.J.**. (2021) Investigating Knowledge Tracing Models using Simulated Students. In *Proceedings of the AAAI 2021 Spring Symposium on AI for K12 Education*.

W15 Gupta, A.,**MacLellan, C.J.**. (2021) Designing Teachable Systems for Intelligent Tutor Authoring. In *Proceedings of the AAAI 2021 Spring Symposium on AI for K12 Education*.

W14 **MacLellan, C.J.**, Harpstead, E., Sheline, R. (2019) A Human-centered Approach to Designing Teachable Systems. In *Proceedings of the CHI 2019 Workshop titled Where is the Human? Bridging the Gap Between AI and HCI*.

W13 Harpstead, E., **MacLellan, C.J.** (2019). Visualizing the Solution Space of Educational Games using Trestle. In *Companion Proceedings of the 9th International Conference on Learning Analytics & Knowledge (LAK19)*.

W12 Harpstead, E., **MacLellan, C.J.**, Koedinger K.R. (2018). Towards Natural Cognitive System Training Interactions: A Preliminary Framework. In *Proceedings of the AAAI 2018 Spring Symposium on the User Experience of Artificial Intelligence*.

W11 **MacLellan, C.J.**, (2016). Apprentice Learner Architecture: A framework for modeling human learning from demonstrations and feedback in digital environments. *Proceedings of the Students of Cognitive Systems Workshop at the Fourth Annual Conference on Advances in Cognitive Systems*. Evanston, IL: Advances in Cognitive Systems.

W10 **MacLellan, C.J.**, (2016). Investigating the Impact of Slipping Parameters on Addative Factors Model Parameter Estimates. *Proceedings of the 9th International Conference on Educational Data Mining*. Raleigh, NC: International Educational Data Mining Society.

W9 **MacLellan, C.J.**, Harpstead, E., Wiese, E.S., Zou, M., Matsuda, N., Aleven, V., Koedinger, K.R. (2015). Authoring Tutors with Complex Solutions: A Comparative Analysis of Example Tracing and SimStudent. In J. Boticario K. Muldner (Eds.), *Proceedings of the Workshops at the 17th International Conference on Artificial Intelligence in Education AIED 2015* (Vol. 5, pp. 35-44). Aachen: CEUR-WS.org.

W8 Harpstead, E., **MacLellan, C.J.**, Aleven, V. (2015). Discovering Knowledge Models in an Open-Ended Educational Game using Concept Formation. In J. Boticario, K. Muldner (Eds.), *Proceedings of the Workshops at the 17th International Conference on Artificial Intelligence in Education AIED 2015* (Vol. 2, pp. 9-16). Aachen: CEUR-WS.org.

W7 Koedinger, K.R., Matsuda, N., **MacLellan, C.J.**, McLaughlin, E.A. (2015). Methods for Evaluating Simulated Learners: Examples from SimStudent. In J. Boticario, K. Muldner (Eds.), *Proceedings of the Workshops at the 17th International Conference on Artificial Intelligence in Education AIED 2015* (Vol. 5, pp. 45-54). Aachen: CEUR-WS.org.

W6 **MacLellan, C.J.**, Wiese, E.S., Matsuda, N., Koedinger, K.R. (2014). SimStudent: Authoring Expert Models by Tutoring. In R. Sottilare (Ed.), *Proceedings of the Second Annual GIFT Users Symposium* (pp. 25-32). Orlando, FL: US Army Research Laboratory.

W5 **MacLellan, C.J.**, Wiese, E.S., Matsuda, N., Koedinger, K.R. (2014). SimStudent: Improving Tutor Quality and Reducing Authoring Costs. In *Workshop Proceedings of the 12th International*

Conference on Intelligent Tutoring Systems.

W4 Harpstead, E., **MacLellan, C.J.**, Aleven, V., Koedinger, K.R. (2014). Using Data to Explore the Differences between Instructional Vision and Student Performance. In *Learning Innovations at Scale CHI 2014 Workshop*.

W3 **MacLellan, C.J.**, Matsuda, N., Koedinger, K. R. (2013). Toward a reflective SimStudent: Using experience to avoid generalization errors. In E. Walker, C. Looi (Eds.), *Proceedings of the Workshops at the 16th International Conference on Artificial Intelligence in Education AIED 2013* (Vol. 4). Aachen: CEUR-WS.org.

W2 Langley, P., Emery, M., Barley, M., **MacLellan, C.J.** (2013). An Architecture for Flexible Problem Solving. In *Annual Conference on Advances in Cognitive Systems: Workshop on Metacognition in Situated Agents*.

W1 Langley, P., Emery, M., Barley, M., **MacLellan, C.J.** (2013). An Architecture for Flexible Problem Solving. In *Proceedings of the Annual Conference on Advances in Cognitive Systems: Workshop on Metacognition in Situated Agents*.

Short Papers and Posters

P7 Zhang, Q., Chen, Z., Lalwani, N., **MacLellan, C.J.** (2022). Modifying Deep Knowledge Tracing for Multi-step Problems. In *Proceedings of the 15th International Conference on Educational Data Mining*.

P6 Zhang, Q., **MacLellan, C.J.** (2022). (A)I Will Teach You to Play Gomoku: Exploring the Use of Game AI to Teach People. In *L@S '22: Proceedings of the Ninth ACM Conference on Learning @ Scale*.

P5 **MacLellan, C.J.**, Thakur, H. (2021). Convolutional Cobweb: A Model of Incremental Learning from 2D Images. In *Proceedings of the Ninth Annual Conference on Advances in Cognitive Systems*.

P4 Sheline, R., **MacLellan, C.J.** (2018). Investigating Machine-Learning Interaction with Wizard-of-Oz Experiments. In *Proceedings of the NeurIPS 2018 Workshop on Learning by Instruction*.

P3 Tenison, C., **MacLellan, C.J.** (2015). The Impact of Instructional Intervention and Practice on Help-Seeking Strategies within an ITS. In O.C. Santos et al. (Eds.), *Proceedings of the 8th International Conference on Educational Data Mining*. International Educational Data Mining Society.

P2 **MacLellan, C.J.**, Langley, P., Walker, C. (2012). A Generative Theory of Problem Solving. In *Proceedings of the First Conference on Advances in Cognitive Systems: Poster Collection*. Cognitive Systems Foundation.

P1 **MacLellan, C.J.** (2011). An elaboration account of insight. In *Proceedings of the 2011 AAAI Fall Symposium on Advances in Cognitive Systems* (pp. 194-201). Arlington, VA: AAAI Press.

Invited Talks and Seminars

T20 **MacLellan, C.J.** (2023). Leveraging games to build teachable agents for human-machine teaming, The CogSci-23 Workshop on "Video games as a path to a contextualized cognitive science, or How to play 20 questions with nature and win".

T19 **MacLellan, C.J.** (2023). Computational Models of Human-Like Skill and Concept Formation, GVU Seminar, Georgia Institute of Technology.

T18 **MacLellan, C.J.** (2023). Computational Models of Human-Like Skill and Concept Formation, IU CogSci Seminar, Indiana University.

T17 **MacLellan, C.J.** (2022). Teachable AI: A cognitively inspired and human-centered approach to the knowledge transfer problem, Institute of Cognitive Science, University of Colorado Boulder.

T16 **MacLellan, C.J.** (2022). How to make AI more interdisciplinary. The 12th Symposium on Educational Advancements in Artificial Intelligence.

T15 Gupta, A., **MacLellan, C.J.** (2022). Learning Expert Models for Educationally Relevant Tasks using Reinforcement Learning. The AAAI-22 Workshop on Reinforcement Learning for Education.

T14 **MacLellan, C.J.** (2021). Learning Expert Models for Educationally Relevant Tasks using Reinforcement Learning. Reinforcement Learning for Education Workshop at the 14th International Conference on Educational Data Mining.

T13 **MacLellan, C.J.** (2021). Teachable AI, College of Computing and Informatics, Drexel University.

T12 **MacLellan, C.J.** (2021). Leveraging Computational Models of Human Learning to Support the Design and Development of Educational Technology at Scale, Process Data Special Interest Group, Educational Testing Services.

T11 **MacLellan, C.J.** (2020). Computational Models of Learning: Applications for Tutor Development and Theory Testing, College of Computing and Informatics, Drexel University, 2020.

T10 **MacLellan, C.J.** (2019). Computational Models of Learning: Applications for Tutor Development and Theory Testing, Computer and Information Science, University of Oregon.

T9 **MacLellan, C.J.** (2019). Computational Models of Learning: Applications for Tutor Development and Theory Testing, School of Interactive Computing, Georgia Institute of Technology, 2019.

T8 **MacLellan, C.J.** (2019). Teachable Cognitive Systems, Computer Science and Engineering, University of Michigan.

T7 **MacLellan, C.J.** (2018). Towards Natural Cognitive System Training Interactions: A Preliminary Framework. AFCEA C4I and Cyber Symposium.

T6 **MacLellan, C.J.** (2016). Computational Models of Learning: Applications for Tutor Development and Theory Testing, Computer Science, University of Rochester.

T5 **MacLellan, C.J.** (2016). Computational Models of Learning: Applications for Tutor Development and Theory Testing, Computer Science, Illinois Institute of Technology.

T4 **MacLellan, C.J.** (2016). Computational Models of Learning: Applications for Tutor Development and Theory Testing, 711th Human Performance Wing, Air Force Research Laboratory.

T3 **MacLellan, C.J.** (2016). Computational Models of Learning: Applications for Tutor Development and Theory Testing, Computer Science, University of Kentucky.

T2 **MacLellan, C.J.** (2016). Towards a Computational Model of Human Learning from Interactive Training, University of Pittsburgh.

T1 **MacLellan, C.J.** (2009). Cryptography and Code Breaking, Keith and Thyra Thomson Honors Convocation, University of Wyoming.

News Coverage

N4 RealLIST Engineers 2021: These 17 technologists are building Philadelphia's future. October 13, 2021.https://technical.ly/philly/2021/10/13/reallist-engineers-software-most-influential/

N3 DARPA Selects Drexel University Research Team to Innovate Point-of-Care Ultrasound Artificial Intelligence Technology. August 6, 2021. https://drexel.edu/cci/news/2021/August/darpa-selects-drexel-university-research-team-to-innovate-ultrasound-ai-technology/

N2 Drexel is joining NSF research on how AI can make education more accessible. August 5, 2021.

https://technical.ly/philly/2021/08/05/drexel-nsf-research-ai-education/

N1 Drexel Researchers Will Develop Artificial Intelligence Technologies for Adult Learning and Online Education as Part of $220 Million NSF Initiative. July 29, 2021. https://drexel.edu/now/archive/2021/July/NSF-AI-online-adult-learning/

Mentoring and Advising

Postdoctoral Research Advisor

Lane Lawley, School of Interactive Computing, Georgia Tech, November 2022 – September 2023.

PhD Dissertation Advisor

Jennifer Reddig, School of Interactive Computing, Georgia Tech, 2023 – Present.
Glen Smith, School of Interactive Computing, Georgia Tech, 2021 – Present.
Qiao Zhang, School of Interactive Computing, Georgia Tech, 2020 – Present.
Adit Gupta, Computer Science, Drexel, 2020 – Present.
Darryl Hannan, Computer Science, Drexel, 2021 – Present.

PhD Dissertation Committees

Erica Racine, Information Science, Drexel University, 2021 – Present.
Angela Mastrianni, Information Science, Drexel University, 2021 – Present.
Diva Smriti, Drexel University, Drexel University, 2021 – Present.
Jenn Engimann, Computer Science, Drexel University, 2020 – Present.

Other Students Supervised

Duy Nguyen, BS in CS, Georgia Tech, August 2023 – Present.
Momin Siddiqui, MS in CS, Georgia Tech, August 2023 – Present.
Josh Fernandes, BS in CS, Georgia Tech, May 2023 – Present.
Tanush Chopra, BS in CS, Georgia Tech, September 2022 – Present.
Namyata Cheduri, MS in CS, Georgia Tech, September 2022 – Present.
Xin Lian, MS in CS, Georgia Tech, September 2022 – Present.
Anusha Srinivasa, MS in CS, Georgia Tech, September 2022 – December 2022.
Niharika Gali, MS in CS, Georgia Tech, September 2022 – December 2022.
Andrew Chen, MS in Data Science, Drexel, September 2021 – August 2022.
Natasha Lalwani, MS in AI/ML, Drexel, September 2021 – August 2022.
Harshil Thaker, BS in Software Engineering (STAR), Drexel, July 2021 – August 2022.
Daniel Sin, BS in CS (Co-op), Drexel University, April 2021 – September 2021.
Rob Sheline, Engineer, SoarTech, September 2017 – July 2020.
Amrith Deepak, Independent Study, CMU, September 2016 – December 2016
Anant Dadu, Independent Study, CMU, May 2016 – August 2016
Zach Halle, Independent Study, CMU, May 2015 – August 2015
Aohan Lin, Independent Study, CMU, May 2014 – August 2014
Mengfan Zou, Independent Study, CMU, May 2014 – August 2014
Aditya Kothari, Independent Study, CMU, May 2014 – August 2014
Steven Dang, Independent Study, CMU, August 2013 – May 2014
Chiddu Bhat, Independent Study, CMU, May 2013 – August 2013
Collin Walker, Independent Study, ASU, May 2012 – August 2012

Teaching Experience

Georgia Institute of Technology, School of Interactive Computing

Instructor, Knowledge-Based AI, Fall 2022, Fall 2023.
Guest Lecturer, Educational Technology, Fall 2022.

Drexel University, College of Computing and Informatics

Instructor, Data Acquisition and Preprocessing, Fall 2020, Winter 2022.
Instructor, Human-AI Interaction, Fall 2021.
New Course Developer, Human-AI Interaction, Summer 2021.
Instructor, Seminar on Human-AI Interaction, Spring 2021.
New Course Developer, Seminar on Human-AI Interaction, Winter 2021.
Instructor, Data Analysis and Interpretation, Winter 2021.

Drexel University, School of Biomedical Engineering, Science, and Health Sciences

Guest Lecturer, Brain|Technology Convergence I, Summer 2021.

Carnegie Mellon University, Human-Computer Interaction Institute

Teaching Assistant, Software Structures for User Interfaces, Jen Mankoff, Fall 2016.
Teaching Assistant, User-Centered Research and Evaluation, Amy Ogan & Jim Morris, Fall 2015.

Arizona State University, Computer Science and Informatics

Teaching Assistant, Decision Making and Problem Solving, Pat Langley, Spring 2012.

University of Wyoming, Department of Mathematics

Teaching Assistant, Business Calculus, Cynthia Vadnais, Spring 2007 - Spring 2010.
Program Instructor, Acing Algebra, Cynthia Vadnais, Summer 2008.

Service

Department Service

Organizer, Graduating PhD Student Mentoring Program, IC, Georgia Tech, Aug 2022 – Present
Member, IS/CPR/ML Faculty Committee, IC, Georgia Tech, Aug 2022 – Present.
Member, CLC Faculty Committee, IC, Georgia Tech, Aug 2022 – Present.
Member, HCC Faculty Committee, IC, Georgia Tech, Aug 2022 – Present.
Member, HCI Faculty Committee, IC, Georgia Tech, Aug 2022 – Present.
Member, Tenure Track Hiring Committee, Drexel, IS, 2022.
Faculty Representative, Data Science Open House, IS, Drexel, Oct 20, May 21, Aug 21.
Internal NSF Career Grant Reviewer, IS, Drexel, 2021
Member, Applied AI/ML Masters Degree Committee, CS, Drexel, July 2021 – August 2022.
Member, Data Science Curriculum Committee, IS, Drexel, September 2020 - September 2021.
Member, HCI Curriculum Committee, IS, Drexel, September 2020 - September 2021.
Organizer, Program for Interdisciplinary Education Research EdBag Lunch Seminar Series, Carnegie Mellon, 2015.

College Service

Internal NSF GRFP Reviewer, College of Computing and Informatics, Drexel University, 2020

University Service

Member, Graduate Student Excellence Awards Review Committee, Drexel University, 2021.

Professional & Community Service

Lead organizer, Annual Speculative Human-Machine Teaming Workshop, 2022, 2023.

Grant Panel Reviewer, National Science Foundation, 2022, 2023.

Co-Organizer, Foundational AI Committee, NSF ALOE AI Institute, 2022, 2023.

Lead Organizer, Computational Models of Learning Track at the Simon Initiative LearnLab Summer School, Carnegie Mellon University, 2019, 2020, 2021, 2022, 2023.

Grant Panel Reviewer, Institute for Education Sciences, 2021.

Organizer, Students of Cognitive Systems Workshop at Advances in Cognitive Systems, 2016.

Member, Pittsburgh Science of Learning Executive Committee, 2013.

Editorial Boards & Conference Committees

Reviewer, Advances in Cognitive Systems, 2012–2022.

Reviewer, Cognitive Science, 2016, 2022.

Senior Program Committee Member, AAAI, 2022.

Reviewer, AAAI, 2017, 2018, 2020–2021.

Reviewer, Educational Data Mining, 2013–2020.

Reviewer, CHI Play, 2020.

Reviewer, CHI, 2012–2015, 2019.

Reviewer, IAAI, 2019.

Reviewer, Intelligent Tutoring Systems, 2013–2015, 2017, 2018.

Reviewer, AI in Education, 2013–2015, 2017, 2018.

Reviewer, Learning Scale, 2016.

Exchange Student Host, Carnegie Mellon University Fusion Forum, 2015.

Chair, Seventh Annual Inter-Science of Learning Center Student / Postdoc Conference, 2014.

Reviewer, IEEE Transactions on Learning Technologies, 2014.

Language Editor, Central European Journal of Computer Science, 2011–2014.

Member, Graduate Student Professional Society, Arizona State University, 2011–2012.

Last updated: September 15, 2023

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