Aline Normoyle, PhD

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Education

University of Pennsylvania
Ph.D. Computer Science 2009-2015
M. Eng. Computer Graphics and Game Technology 2009

McGill University
B.Sc. Honors Computer Science, Dean's Honor List 1999

Employment History

Academic Employment and Internships
Bryn Mawr College, Assistant Professor 2020-Current
Swarthmore College, Visiting Assistant Professor 2017-2020
Clemson University, Engineering Consultant 2017-2018
Recurse Center, Sabbatical Residency 2016
Robotics Institute, Carnegie Mellon University, Research Assistant 2011-2012
Disney Research, Imagineer Summer 2011

Professional Employment
Savvy Sine LLC, Sole Proprietor 2018-Current
Venturi Labs LLC, Director of Software Development 2017-2020
Moon Collider Ltd, AI Programmer and Researcher 2015-2016
SIG Center for Computer Graphics, University of Pennsylvania, Associate Director 2012-2013
Ackoff Collaboratory for Advancement of the Systems Approach (ACASA),
University of Pennsylvania, Sr. Programmer/Analyst 2006-2008
MAK Technologies, Sr. Software Engineer 1999-2006

Peer-Reviewed Publications

1. Thumu, N., Meacham, F., Normoyle, A., 'Towards Understanding the Role of Curiosity in Puzzle Design'", CHI PLAY Companion '23: Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play, 2023, doi:10.1145/3573382.3616070

2. Adkins, A.; Normoyle, A.; Lin, L.; Sun, Y.; Ye, Y.; Di Luca, M.; Jörg, S., "How Important are Detailed Hand Motions for Communication for a Virtual Character?", ACM Transactions on Graphics, 2022, doi:10.1145/3578575

3. Adkins, A., Lin, L., Normoyle, A., Canales, R., Ye, Y., Jörg, S., "Evaluating grasping visualizations and control modes in a VR game". ACM Transactions on Applied Perception (TAP), 2021, 18(4), doi: 10.1145/3486582

4. Mainardi G., Normoyle A., Cassol V., Badler N. I. and Musse S. R., "An authoring tool to provide group and crowd animation using Natural Language scripts," 20th Brazilian Symposium on Computer Games and Digital Entertainment (SBGames), 2021, doi: 10.1109/SBGames54170.2021.00027

5. Canales, R., Normoyle, A., Sun, Y., Ye, Y., Di Luca, M., Jörg, S., "Virtual Grasping Feedback and the Virtual Hand Ownership", Symposium on Applied Perception, 2019, doi:10.1145/3343036.3343132

6. Cheng, Y., Normoyle, A., "The Q*bird Level Designer: User-assisted procedural level design in augmented reality", Motion in Games, 2019, doi:10.1145/3359566.3364686

7. Lin, L., Normoyle, A., Adkins A., Sun, Y., Robb, A., Ye, Y., Di Luca, M., Jörg, S., "The Effect of Hand Size and Interaction Modality on the Virtual Hand Illusion", IEEE Conference on Virtual Reality and 3D (IEEE VR), 2019, 10.1109/VR.2019.8797787

8. Chow, K., Nicewinter, J., Normoyle, A., Erickson, C., Badler, N.I., "Crowd and procession hypothesis testing for large-scale archaeological sites", MARCH Workshop, IEEE International Conference on Artificial Intelligence And Virtual Reality, 2019, doi:10.1109/AIVR46125.2019.00069

9. Normoyle, A., Jörg, S., "The effect of animation controller and avatar on player perceptions", Computer Animation and Virtual Worlds, 2016, doi:10.1002/cav.1731

10. Normoyle, A., Jensen S. T., "Bayesian Clustering of Player Styles for Multiplayer Games". AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment, 2015, doi:10.1609/aiide.v11i1.12805

11. Normoyle, A., Jörg, S. "Trade-offs between Responsiveness and Naturalness for Player Characters", ACM SIGGRAPH conference in Motion in Games, 2014 (won best paper), doi:10.1145/2668064.2668087

12. Normoyle, A., Guerrero, G., Jörg, S., "Player perception of delays and jitter in character responsiveness", ACM Symposium on Applied Perception, 2014, doi:10.1145/2628257.2628263

13. Normoyle, A., Likhachev M., Safonova A., "Stochastic activity authoring with direct user control", ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games, 2014, doi:10.1145/2556700.2556714

14. Normoyle, A., Badler, J., Fan T., Badler, N.I., Cassol, V., Musse, S., "Evaluating perceived trust from procedurally animated gaze", ACM SIGGRAPH conference in Motion in Games, 2013, doi:10.1145/2522628.2522630

15. Normoyle, A., Liu, F., Kapadia, M., Badler, N.I., Jörg, S., "The Effect of Posture and Dynamics on the Perception of Emotion", ACM Symposium on Applied Perception, 2013 (won best student presentation), doi:10.1145/2492494.2492500

16. Normoyle, A., Drake, J., Likhachev, M., Safonova, A., "Game-based Data Capture for Player Metrics" AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment, 2012, doi:10.1609/aiide.v8i1.12508

17. Joerg, S., Normoyle, A., Safonova, A., "How Responsiveness Affects Players' Perception in Digital Games" ACM Symposium on Applied Perception, 2012, doi:10.1145/2338676.2338683

18. Zhao, L., Normoyle, A., Khanna, S., Safonova, A., "Automatic Construction of a Minimum Size Motion Graph" ACM SIGGRAPH/Eurographics Symposium on Computer Animation, 2009, doi:10.1145/1599470.1599474

19. Silverman, B.G., Normoyle A., Kannan P., Pater R., Chandrasekaran, D., Bharathy G., "An embeddable testbed for insurgent and terrorist agent theories: InsurgiSim" Intelligent Decision Technologies, Volume 2 Issue 4, 2008, 193-203, doi:10.5555/1515884.1515885

20. Knight, K.M., Chandrasekaran, D., Normoyle, A., Weaver, R., Silverman, B.G., "Transgressions and Atonement", In Proceedings of the 4th International Conference on Coordination, Organizations, Institutions and Norms in Agent Systems - Volume 4 (LNCS-COIN'08). 250–265., 2008, doi:10.5555/3000392.3000414

Technical reports, working papers, posters, and talks

1. "The effects of inaccurate body language on 3D digital self-expression.", Invited Seminar Talk, Bamberg University, Bambery, Germany, 2023

2. "How avatar grasping affects perceived body ownership and performance in virtual reality.", Invited Seminar Talk, Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico, 2022

3. Normoyle A., Zhang E., and Badler N. I., "Open-body-fit: open-source resources for estimating biomechanically-motivated metrics from video", Poster, ACM SIGGRAPH Motion, Interaction, and Games (MIG '22). 2022

4. Normoyle A., Artacho B., Savakis A., Senghas A., Badler N. I., Occhino C., Rothstein S. J., Dye M. W. G., "Open-Source Pipeline for Skeletal Modeling of Sign Language Utterances from 2D Video Sources", 14th International Conference on Theoretical Issues in Sign Language Research (TISLR 14), 2022, Stage Presentation
5. Normoyle, A., Jensen, S. T., "Bayesian Learning of Play Styles in Multiplayer Video Games", CoRR abs/2112.07437, 2021 *working paper*
6. Normoyle A., Rothstein S. J., and Badler N. I., "Quantifying sign-language movement kinematics from video", Poster, ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (i3D '21). 2021
7. Lane, S. H. Normoyle, A., "Civic Portal: Virtual Monuments", Fast Forward Philly, 2018
8. Sedoc, J., Normoyle, A., "Seating Assignment Using Constrained Signed Spectral Clustering". CoRR abs/1708.00898, 2017
9. "Procedural Art Pop-up", Recurse Center, Hosted by the School of Machines, Making, and Make Believe, Berlin, December 2017
10. Sunshine-Hill, B., Normoyle, A., "How to use machine learning like a responsible adult", AI Summit, Game Developer Conference, 2015
11. Normoyle, A., Badler N. I., "How do stylistic motions differ numerically from neutral ones?", Poster, ACM SIGGRAPH conference in Motion in Games (MIG '14), 2014
12. Normoyle, A., Drake, J., Safonova, A., "Egress Online: Towards leveraging massively, multiplayer environments for evacuation studies", University of Pennsylvania Department of Computer and Information Science Technical Report No. MS-CIS-12-15. 2012
13. Summers, V.A., Normoyle, A., Flo R., "Increasing Situational Awareness by Combining Realistic and Non-Realistic Rendering Techniques" 10th International Command and Control Research and Technology Symposium, 2005, Conference Paper, Accession Number: ADA463760

Patents

1. Lane, S.H., Boyd-Surka, M.A., Bai, Y. and Normoyle, A.S., University of Pennsylvania Penn, 2022. Methods, systems, and computer readable media for extended reality user interface. U.S. Patent Application 17/412,197. (in submission)

Grants and Awards Received

1. Bryn Mawr College Digital Scholarship Grant, 2023-2024, "Game-based experiment platform development"
2. National Science Foundation, 2019-2022, "Collaborative Research: Multimethod Investigation of Articulatory and Perceptual Constraints on Natural Language Evolution" (Award 1749397)
3. Swarthmore Faculty Research Support Award, 2018-2019, "Game-based experiment platform development"
4. Wharton Customer Analytics Initiative, 2014, "Discovery of Latent Play Styles for Improved Game Matching and Prediction"
5. Best paper award for "Trade-offs between Responsiveness and Naturalness for Player Characters", ACM SIGGRAPH conference in Motion in Games, 2014
6. Best student presentation for "The Effect of Posture and Dynamics on the Perception of Emotion", ACM Symposium on Applied Perception, 2013
7. Teaching practicum award, University of Pennsylvania, 2010

Teaching

Bryn Mawr College, Assistant Professor

CS 399: Senior Conference	Spring 2022
CS 317: Computer Animation	Fall 2021
CS 312: Computer Graphics	Spring 2023, Spring 2021
CS 283: Game Programming	Fall 2024
CS 231: Discrete Math	Fall 2021
CS 223: Systems Programming	S25, F24, S23, F22, S22
CS 113: Introduction to Computer Science	Fall 2022, Spring 2021
CS 110: Introduction to Computing	Fall 2020

Swarthmore College, Visiting Assistant Professor

CS 71: Software Engineering	Spring 2019
CS 21: Introduction to Computer Science	Fall 2018, Spring 2020
CS 56/91: Computer Animation	Spring 2018, Spring 2017, Fall 2019

University of Pennsylvania, Co-Instructor

CIS 497: Senior capstone project	2014-2015

University of Pennsylvania, Student Instructor

CIS 563: Physically-based Animation	Spring 2011

University of Pennsylvania, Teaching Assistant

Winner of the University of Pennsylvania Teaching Practicum Award

CIS 563: Physically-based Animation	Spring 2010
CIS 660: Advanced Graphics	Spring 2010, 2011
CIS (EAS) 499: Senior Capstone Project	2010-2011

Academic Service

Institutional Service

Committee on Libraries, Information and Computing (CLIC)	2024-2027
Faculty Contact for the University of Pennsylvania Accelerated Master's Program (4+1)	2023-Current
Institutional Review Board, Bryn Mawr College	2021-Current
Playing House: A seminar featuring Mark Z. Danielewski	Spring 2024
Collaborated with primary organizer, Jose Vergara	
Panel discussion: Literature, game design, and storytelling	
Canaday Library Exhibit Setup (One week)	
PEW Grant: Retrospective of Annie Dorsen's Algorithmic Theater	Spring 2023
Collaborated with primary organizer, Linda Caruso Haviland	
Host for LaJuné McmIllian Visit	
Organizer for Chatbot Improv event	
STEM Posse Summer Workshop, Bryn Mawr College	2022-2024
STEMLA Summer Workshop, Bryn Mawr College	2023-2024
STEMLA Summer Academic Fair, Bryn Mawr College	August 2021, 2022
Computer Graphics Honors Examiner, Swarthmore College	Spring 2021
Career Services and Job Events, Swarthmore College Computer Science Department	2018-2020
Judge, SisterHacks, Bryn Mawr College	2018-2019
Society of Women Gears Worskhop Leader, University of Pennsylvania	2011-2013

Academic Conference Organization

IEEE VR Workshop on Multi-modal Affective and Social Behavior Analysis and Synthesis in Extended Reality (MASSXR)	2024
ACM SIGGRAPH Conference in Motion, Interaction and Games (MIG), Program Co-chair	2022

Academic Program Committees and Editorships

ACM SIGGRAPH, General Submission Juror	2024
International Conference on Interactive Media, Smart Systems and Emerging Technologies (IMET)	2023
IEEE VR 2023 Workshop: MASSXR-Multi-modal Affective & Social Behavior Analysis and Synthesis in Extended Reality (MASSXR)	2023
International Conference on Computer Animation and Social Agents (CASA)	2023
Computers & Graphics: Special Section on Motion, Interaction and Games (MIG)	2022
Graphics Interfaces (GI)	2022-2023
ACM Conference on Intelligent Virtual Agents (IVA)	2015-2024
AAAI Conference on Artificial Intelligence in Interactive Digital Entertainment (AIIDE)	2016-2024
ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (i3D)	2018-2022, 2024
ACM SIGGRAPH Conference in Motion, Interaction and Games (MIG)	2011-2018,2022-2024

Additional Reviewing (Journals and Books)

Computer Graphics and Applications	2023
ACM Transactions on Applied Perception	2022
ACM SIGGRAPH Tertiary Reviewer	2019
GPU Zen 2	2018
webGL Insights	2014

Academic Software

1. AGL: A Graphics Library. *Small, easy to use C++ library for 3D drawing, based on openGL.*, 2021
   https://github.com/alinen/agl
2. ATK: Animation Toolkit. *C++ character animation library.*, 2021
   https://github.com/alinen/atk
3. open-body-fit *Open-source resources for estimating biomechanically-motivated metrics from video.*, 2022
   https://github.com/alinen/open-body-fit

Advising

Bryn Mawr College Thesis

Foqia Shahid, Spring 2023, *Body Transfer in Animal Avatars: An Investigation of Virtual Reality Control Mapping Strategies*

Judy Wang, Spring 2023, *Investigating Body Ownership in Animal Avatars through Virtual Reality*

Jasmine Lei, Spring 2023, *Visuaizing Chaotic Systems*

Alec Mazzoli, Spring 2022, *The Impact of Agent Performance on Human-Agent Conversational Error Analysis*

Haiqa Kamran, Spring 2022, *Charitably: An Aggregator Web Application for Charity Causes and Events*

Sarah Coufal, Spring 2022, *Embodiment from Video*

William Lawrence, Spring 2022, *Automatic Placement of Cultural Objects Within a Simulated Archaeological Environment*

Faryal Khan, Spring 2022, *Scripting Crowd Behaviors in SPACES*

Faith Meacham, Spring 2021, *Procedural Level Generation for Monument Valley Styled Puzzle Games*

Jocelyn Dunkley, Spring 2020, *VR Orchestra App: Violin Prototype*

Linda Zhu, Spring 2020, *InstructAR: Building a Deliverable Infrastructure of How-to Kits for Assembly Scenarios in Augmented Reality*

Haverford College Thesis

Joel Torres, Fall 2023, *Facilitating Emotional Wellness Through Virtual Reality*

Neha Thumu, Fall 2023, *Procedural Content Generation for Puzzles*

David Dinh, Fall 2022, *Parallel Computation: Simulating Smoke on the GPU*

Macintyre Sunde, Spring 2022-Fall 2022, *hape Grammars for Architectural Reconstruction*

Olga Shevchuk, Fall 2021-Spring 2022, *Skinning of Characters with Polygonal Mesh*

Ziyao Wang, Fall 2021, *Artistic Hair Modeling*

Yuxiao Wang, Fall 2020, *Literature Review: Embodied Conversational Agents*

Independent Study

Neha Thumu, Spring 2023, *Control Strategies for Mobile Augmented Reality*

Neha Thumu, Fall 2022, *Motion and navigation planning for digital characters*

Samuel J. Rothstein, Spring 2020, *Procedural generation of body language*

Michael Piazza, Spring 2017, *Topics in Procedural Animation*

Research students

Zachary Tenn Yuk, Summer 2024, University of Florida REU, *EduToon: Generating comic book summaries for academic papers.*

Neha Thumu, Summer 2022, Bryn Mawr Summer Science Researcher (SSR), *Understanding how character control and level design affect the player experience in video games*

Edward Zhang, Summer 2022, University of Pennsylvania REU, *Collaborative Research: Multimethod Investigation of Articulatory and Perceptual Constraints on Natural Language Evolution.*

Gulesh Shukla, Spring 2022, Bryn Mawr RA, *Analysis of motion from video*

Lola Rodgrigues, Fall 2021, Bryn Mawr RA, *Peg Board Task Game*

Samuel J. Rothstein, Summer 2020, University of Pennsylvania REU, *Collaborative Research: Multimethod Investigation of Articulatory and Perceptual Constraints on Natural Language Evolution.*

Felicity Yick and Samantha Lee, Summer 2020, University of Pennsylvania Summer Research, *SPACES Project: Recreating the ancient city of Pachacamac.*

Katherine Lima, Summer 2019, Swarthmore Summer Researcher, *Role Player Game (RPG) Development for Artificial Intelligence Testbed*

Yi Fei Cheng, Summer 2019, Swarthmore Summer Researcher, *The Q*Bird Level Designer: User-assisted procedural Level Design in Augmented Reality*

Mirabai Smoot and Nana Anikuabe, Summer 2019, Swarthmore Summer Researcher, *Adaptive Bayesian learning of Playstyles*

Effie Li, Summer 2019, University of Pennsylvania REU, *Collaborative Research: Multimethod Investigation of Articulatory and Perceptual Constraints on Natural Language Evolution.*

Kristin Chow, Summer 2019, University of Pennsylvania Summer Researcher, *SPACES Project: Recreating the ancient city of Pachacamac.*

Xuan Huang, Spring 2017, Bryn Mawr College, *Procedural Generation of Cities*

Mentorship and Support

Chandini Ragobar, Summer 2023, Haverford College, Chesick Summer Experience Funding

Swarthmore CPSC 000SR, Spring 2019, Student instructor: Aaron Kang, *Introduction to Unity*