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. 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 *forthcoming*, 2022

2. 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

3. 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

4. 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

5. 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

6. 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

7. 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

8. 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

9. Normoyle, A., Jensen S. T., "Bayesian Learning of Play Styles in Multiplayer Video Games". AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment, 2015, doi:10.1609/aiide.v11i1.12805

10. 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

11. 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

12. 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

13. 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

14. 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

15. 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

16. 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

17. 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

18. 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

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

2. 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

3. 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

4. Normoyle, A., Jensen, S. T., "Bayesian Learning of Play Styles in Multiplayer Video Games", CoRR abs/2112.07437, 2021 *working paper*

5. 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

6. Lane, S. H. Normoyle, A., "Civic Portal: Virtual Monuments", Fast Forward Philly, 2018

7. Sedoc, J., Normoyle, A., "Seating Assignment Using Constrained Signed Spectral Clustering". CoRR abs/1708.00898, 2017

8. "Procedural Art Pop-up", Recurse Center, Hosted by the School of Machines, Making, and Make Believe, Berlin, December 2017

9. Sunshine-Hill, B., Normoyle, A., "How to use machine learning like a responsible adult", AI Summit, Game Developer Conference, 2015

10. 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

11. 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

12. 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. National Science Foundation, 2019-2022, "Collaborative Research: Multimethod Investigation of Articulatory and Perceptual Constraints on Natural Language Evolution" (Award 1749397)

2. Swarthmore Faculty Research Support Award, 2018-2019, "Game-based experiment platform development"

3. Wharton Customer Analytics Initiative, 2014, "Discovery of Latent Play Styles for Improved Game Matching and Prediction"

4. Best paper award for "Trade-offs between Responsiveness and Naturalness for Player Characters", ACM SIGGRAPH conference in Motion in Games, 2014

5. Best student presentation for "The Effect of Posture and Dynamics on the Perception of Emotion", ACM Symposium on Applied Perception, 2013

6. Teaching practicum award, University of Pennsylvania, 2010

Teaching

Bryn Mawr College, Assistant Professor

CS 399: Senior Conference	Spring 2022
CS 223: Systems Programming	Fall 2022, Spring 2022
CS 317: Computer Animation	Fall 2021
CS 231: Discrete Math	Fall 2021
CS 312: Computer Graphics	Spring 2023, Spring 2021
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

Institutional Review Board, Bryn Mawr College	2021-Current
STEM Posse Immersion Workshop, Bryn Mawr College	June 2022
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

ACM SIGGRAPH Conference in Motion, Interaction and Games (MIG), Program Co-chair	2022

Academic Program Committees and Editorships

Computers & Graphics: Special Section on Motion, Interaction and Games (MIG)	2022
Graphics Interfaces (GI)	2022-2023
ACM Conference on Intelligent Virtual Agents (IVA)	2015-2022
AAAI Conference on Artificial Intelligence in Interactive Digital Entertainment (AIIDE)	2016-2022
ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (i3D)	2018-2022
ACM SIGGRAPH Conference in Motion, Interaction and Games (MIG)	2011-2018

Additional Reviewing (Academics and Books)

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

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

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

Sarah Coufal, "Embodiment from Video", Spring 2022

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

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

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

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

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

Haverford College Thesis

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

Macintyre Sunde, Shape Grammars for Architectural Reconstruction, Spring 2022, Fall 2022

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

Ziyao Wang, "Artistic Hair Modeling", Fall 2021

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

Independent Study

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

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

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

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

Research students

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

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

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

Lola Rodgrigues, Bryn Mawr RA, "Peg Game Task", Fall 2021

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

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

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

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

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

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

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

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