Dominic Kao

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610 Purdue Mall, West Lafayette, IN 47907   kaod@purdue.edu

Education

- **Massachusetts Institute of Technology**   **Cambridge, MA**
  Ph.D. in Computer Science   *2018*

- **Princeton University**   **Princeton, NJ**
  M.S.E. in Computer Science   *2012*

- **University of Alberta**   **Edmonton, AB**
  B.S. in Computer Engineering Co-op   *2009*

Experience

- **Purdue University**   **West Lafayette, IN**
  Assistant Professor   *08/2018 – present*

  – Assistant Professor in Computer & Information Technology

- **Electronic Arts**   **Burnaby, BC**
  Game Developer   *03/2010 – 08/2010*

  – Worked on EA Sports Active 2 for Xbox Kinect and Playstation 3

- **Electronic Arts**   **Vancouver, BC**
  Game Developer   *05/2008 – 12/2008*

  – Worked on core tools used in the Need for Speed and Skate franchises

Publications

D. Kao, N. Ballou, K. Gerling, H. Breitsohl, S. Deterding
How does Juicy Game Feedback Motivate? Testing Curiosity, Competence, and Effectance
ACM Human Factors in Computing Systems (CHI), 2024. [paper]

D. Kao, S. T. Mubarrat, A. Joshi, S. Pandita, C. Mousas, H. N. Liang, R. Ratan
Exploring How Gender-Anonymous Voice Avatars Influence Women's Performance in Online Computing Group Work
International Journal of Human-Computer Studies, 2024. [paper]

S. Guo, M. Choi, **D. Kao**, C. Mousas.
Collaborating With My Doppelgänger: The Effects of Self-Similar Appearance and Voice of a Virtual Character During a Jigsaw Puzzle Co-solving Task
ACM SIGGRAPH I3D, 2024. [paper]

B. Chen, X. Yan, X. Hu, **D. Kao**, H.N. Liang.
Impact of Tutorial Modes with Different Time Flow Rates in Virtual Reality Games
ACM SIGGRAPH I3D, 2024. [paper]

S. Pandita, R. Ratan, T. Kim, D. Jang, C. Lim, K. Xu, A.S. Won, V. Stavropoulos, P. Sinlapanuntakul, A.S. Praetorius, J. Peña, I. Park, K. Nowak, N. Matthews, V. McArthur, J. Lin, K.M. Lee, B. Klebig, S.S. Kim, **D. Kao**, A.S. Kahn, D.C. Jeong, B. Hasler, D.F. Harrell, E. Han, A. Gambino, E. Downs, J. Cummings, C.L. Cook, V.H. Chen, D. Banakou, L. Aymerich-Franch.
The Development and Validation of the Motivations for Avatar-Mediated Meetings (MAMM) Scale
International Communication Association (ICA), 2024. [paper]

M. Nelson, A. Koilias, **D. Kao**, C. Mousas.
Effects of Speed of a Collocated Virtual Walker and Proximity Toward a Static Virtual Character on Avoidance Movement Behavior
International Symposium on Mixed and Augmented Reality (*ISMAR*), 2023. [paper]

M. Choi, A. Koilias, M. Volonte, **D. Kao**, C. Mousas.
Exploring the Appearance and Voice Mismatch of Virtual Characters
Adjunct Proceedings of the International Symposium on Mixed and Augmented Reality (*ISMAR*), 2023. [poster]

W. Xu, K. Yu, X. Meng, D. Monteiro, **D. Kao**, H. N. Liang
Exploring the Effect of the Group Size and Feedback of Non-Player Character Spectators in Virtual Reality Exergames
Frontiers in Psychology (*Front. Psychol.*), 2023. [paper]

J. Wang, R. Shi, W. Zheng, W. Xie, **D. Kao**, H. N. Liang
Effect of Frame Rate on User Experience, Performance, and Simulator Sickness in Virtual Reality
IEEE Conference on Virtual Reality and 3D User Interfaces, published in IEEE TVCG, 2023. [paper]

H. Liu, M. Choi, **D. Kao**, C. Mousas
Synthesizing Game Levels for Collaborative Gameplay in a Shared Virtual Environment
ACM Transactions on Interactive Intelligent Systems (*TiiS*), 2023. [paper]

D. Kao, A.J. Magana, O. Oyedokun, A. Ravi
Towards an Educational Computing Career Exploration Game
Extended Abstracts of ACM Computer-Human Interaction in Play (*CHI PLAY*), 2022. [work in progress]

P. Acevedo, M. Choi, H. Liu, **D. Kao**, C. Mousas
Procedural Game Level Design to Trigger Spatial Exploration
Foundations of Digital Games (*FDG*), 2022. [workshop paper]

A. Joshi, C. Mousas, D. F. Harrell, **D. Kao**
Exploring the Influence of Demographic Factors on Progression and Playtime in Educational Games
Foundations of Digital Games (*FDG*), 2022. [paper]

O. Keehl, **D. Kao**, E. Melcer
Zen Hanzi: A Game for Raising Hanzi Component Awareness
Foundations of Digital Games (*FDG*), 2022. [paper]

D. Kao, R. Ratan, C. Mousas, A. Joshi, E. Melcer
Audio Matters Too: How Audial Avatar Customization Enhances Visual Avatar Customization
ACM Human Factors in Computing Systems (*CHI*), 2022. [paper]
Honorable Mention.

A.J. Magana, J. Hwang, S. Feng, S. Rebello, T. Zu, **D. Kao**
Emotional and Cognitive Effects of Learning with Computer Simulations and Computer Videogames
Journal of Computer Assisted Learning, 2022. [paper]

R. Sharma, E. Melcer, **D. Kao**
Exploring Relevance, Meaningfulness, and Perceived Learning in Entertainment Games
Digital Games Research Association (*DiGRA*), 2022. [paper]

M.A. Chang, A.J. Magana, B. Benes, **D. Kao**, J. Fusco
Driving Interdisciplinary Collaboration through Adapted Conjecture Mapping: A Case Study with the PECAS Mediator
Digital Promise, 2022. [technical report]

D. Kao
The Effects of Observation in Video Games: How Remote Observation Influences Player Experience, Motivation, and Behaviour
Behaviour & Information Technology (*BIT*), 2022. [paper]

N. Ballou, H. Breitsohl, **D. Kao**, K. Gerling, S. Deterding
Not Very Effective: Validity Issues of the Effectance in Games Scale
Extended Abstracts of ACM Computer-Human Interaction in Play (*CHI PLAY*), 2021. [work in progress]

D. Kao, R. Ratan, C. Mousas, A.J. Magana
The Effects of a Self-Similar Avatar Voice in Educational Games
ACM Computer-Human Interaction in Play (*CHI PLAY*), 2021. [paper]
Honorable Mention.

D. Kao, A.J. Magana, C. Mousas
Evaluating Tutorial-Based Instructions for Controllers in Virtual Reality Games
ACM Computer-Human Interaction in Play (*CHI PLAY*), 2021. [paper]

C. Mousas, **D. Kao**, A. Koilias, B. Rekabdar
Evaluating Virtual Reality Locomotion Interfaces on Collision Avoidance Task with a Virtual Character
The Visual Computer (*Proc. of CGI 2021*), 2021. [paper]

D. Kao, A. Joshi, C. Mousas, A. Peddireddy, A. K. Gopi, J. Li, J. Springer, B. S. McGowan, J. B. Reed
Fighting COVID-19 at Purdue University: Design and Evaluation of a Game for Teaching COVID-19 Hygienic Best Practices
Foundations of Digital Games (*FDG*), 2021. [paper]

D. Cui, **D. Kao**, C. Mousas
Toward Understanding Embodied Human-Virtual Character Interaction Through Virtual and Tactile Hugging
Computer Animation and Social Agents (*CASA*), 2021. [paper]

C. Mousas, A. Koilias, B. Rekabdar, **D. Kao**, D. Anastasiou.
Toward Understanding the Effects of Virtual Character Appearance on Avoidance Movement Behavior
Conference on Virtual Reality and 3D User Interfaces (*IEEE VR*), 2021. [paper]

S. Feng, A.J. Magana, **D. Kao**.
A Systematic Review of Literature on the Effectiveness of Intelligent Tutoring Systems in STEM
IEEE Frontiers in Education Conference (*FIE*), 2021. [paper]

T. Karabiyik, **D. Kao**, A.J. Magana.
First-Year Exploratory Studies about Students' Career Decision Processes and the Impact of Data-Driven Decision Making
The Educational Review, USA, 2021. [paper]

H. Liu, Z. Wang, C. Mousas, **D. Kao**.
Virtual Reality Racket Sports: Virtual Drills for Exercise and Training
International Symposium on Mixed and Augmented Reality (*ISMAR*), 2020. [paper]

B. Sherrick, C. L. Smith, **D. Kao**, M. Yuan, C. Mousas.
Using Real-Time, In-Game Measures to Evaluate Game Difficulty
National Communication Association (*NCA*), 2020. [paper]

D. Kao, C. Mousas, A.J. Magana, D.F. Harrell, R. Ratan, E.F. Melcer, B. Sherrick, P. Parsons, D.A. Gusev.
Hack.VR: A Programming Game in Virtual Reality
Foundations of Digital Games (*FDG*), 2020. [poster]

D. Kao.
Exploring Help Facilities in Game-Making Software
Foundations of Digital Games (*FDG*), 2020. [paper]
Best Paper Nominee.

D. Kao.
The Effects of Juiciness in an Action RPG.
Entertainment Computing (*ENTCOM*), 2020. [paper]

C. Mousas, **D. Kao**, A. Koilias, B. Rekabdar.
Real and Virtual Environment Mismatching Induces Arousal and Alters Movement Behavior
Conference on Virtual Reality and 3D User Interfaces (*IEEE VR*), 2020. [paper]

D. Kao.
JavaStrike: A Java Programming Engine Embedded in Virtual Worlds
Foundations of Digital Games (*FDG*), 2019. [poster]

D. Kao.
The Effects of Anthropomorphic Avatars vs. Non-Anthropomorphic Avatars in a Jumping Game
Foundations of Digital Games (FDG), 2019. [poster]

D. Kao, J.J. De Simone.
Exploring How Preference and Perceived Performance Vary in Different Game Genres Across Time of Day
Foundations of Digital Games (FDG), 2019. [poster]

D. Kao.
Infinite Loot Box: A Platform for Simulating Video Game Loot Boxes
IEEE Transactions on Games (TOG), 2019. [paper]
Best Paper Nominee.

D. Kao.
Exploring the Effects of Growth Mindset Usernames in STEM Games
American Educational Research Association (AERA), 2019. [paper]

S. V. Harrell, M. Wagoner, **D. Kao**, D. Olson, A. Rodriguez, D. F. Harrell.
Toward Using Virtual Identities in Computer Science Learning for Broadening Participation
American Educational Research Association (AERA), 2019. [poster]

D. F. Harrell, D. Olson, **D. Kao**, A. Rodriguez, L. Carney, S. V. Harrell.
Exploring the Use of Virtual Identities for Broadening Participation in Computer Science Learning
Immersive Learning Research Network (iLRN), 2018. [paper]

D. Kao, D. F. Harrell.
The Effects of Badges and Avatar Identification on Play and Making in Educational Games
Human Factors in Computing Systems (CHI), 2018. [paper]

D. Kao.
Researching and Developing the Impacts of Virtual Identity on Computational Learning Environments
Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, 2018. [phd thesis]

D. Kao, D. F. Harrell.
Embellishment & Effects: Seduction by Style
Avatar, Assembled, New York, NY: Peter Lang, 2017. [book chapter]

D. Kao, D. F. Harrell.
MazeStar: A Platform for Studying Virtual Identity and Computer Science Education
Foundations of Digital Games (FDG), 2017. [workshop paper]

D. Kao, D. F. Harrell.
Toward Understanding the Impact of Visual Themes and Embellishment on Performance, Engagement, and Self-Efficacy in Educational Games
American Educational Research Association (AERA), 2017. [paper]
Best Student Paper award.

D. Kao, D. F. Harrell.
Exploring the Effects of Dynamic Avatars on Performance and Engagement in Educational Games
Games+Learning+Society (GLS), 2016. [paper]

D. Kao, D. F. Harrell, C. Lim, S. V. Harrell, M. Wagoner, H. Ho.
Highlighting MazeStar: A Platform for Studying Avatar Use in Computer Science Learning Environments
Games+Learning+Society (GLS), 2016. [showcase]

D. Kao, D. F. Harrell.
Exploring the Impact of Avatar Color on Game Experience in Educational Games
Extended Abstracts of Human Factors in Computing Systems (CHI), 2016. [late-breaking]

D. Kao, D. F. Harrell.
Exploring the Effects of Encouragement in Educational Games
Extended Abstracts of Human Factors in Computing Systems (CHI), 2016. [late-breaking]

D. Kao, D. F. Harrell.
Toward Understanding the Impacts of Role Model Avatars on Engagement in Computer Science Learning
American Educational Research Association (AERA), 2016. [paper]

D. Kao, D. F. Harrell.
Exploring the Use of Role Model Avatars in Educational Games
Experimental AI in Games (EXAG), 2015. [workshop paper]

D. Kao, D. F. Harrell.
Exploring the Impact of Role Model Avatars on Game Experience in Educational Games
Computer-Human Interaction in Play (CHI PLAY), 2015. [works-in-progress]

D. Kao, D. F. Harrell.
Toward Avatar Models to Enhance Performance and Engagement in Educational Games
Computational Intelligence in Games (CIG), 2015. [paper]

D. F. Harrell, **D. Kao**, C. Lim.
Toward Understanding Real-World Social Impacts of Avatars
Electronic Literature Organization (ELO), 2015. [panel]

D. Kao, D. F. Harrell.
Toward Evaluating the Impacts of Virtual Identities on STEM Learning
Foundations of Digital Games (FDG), 2015. [doctoral consortium]

D. Kao, D. F. Harrell.
Exigent: An Automatic Avatar Generation System
Foundations of Digital Games (FDG), 2015. [poster]

D. Kao, D. F. Harrell.
Mazzy: A STEM Learning Game
Foundations of Digital Games (FDG), 2015. [poster]

D. Kao, D. F. Harrell.
Exploring construction, play, use of virtual identities in STEM learning
Jean Piaget Society Annual Conference (JPS), 2015. [paper]

D. F. Harrell, **D. Kao**, C. Lim, J. Lipshin, A. Sutherland.
The Chimeria Platform: User Empowerment through Expressing Social Group Membership Phenomena
Digital Humanities (DH), 2014. [paper]

D. F. Harrell, **D. Kao**, C. Lim, J. Lipshin, A. Sutherland.
Stories of Stigma and Acceptance Using the Chimeria Platform
Electronic Literature Organization (ELO), 2014. [paper]

D. F. Harrell, **D. Kao**, C. Lim, J. Lipshin, A. Sutherland, J. Makivic.
The Chimeria Platform: An Intelligent Narrative System for Modeling Social Identity-Related Experiences
Intelligent Narrative Technologies (INT), 2014. [poster]

D. F. Harrell, **D. Kao**, C. Lim, J. Lipshin, A. Sutherland, J. Makivic, D. Olson.
Authoring Conversational Narratives in Games with the Chimeria Platform
Foundations of Digital Games (FDG), 2014. [paper]
Best Paper honorable mention.

D. F. Harrell, **D. Kao**, C. Lim.
Computationally Modeling Narratives of Social Group Membership with the Chimeria System
Computational Models of Narrative (CMN), 2013. [workshop paper]

D. F. Harrell, C. Lim, **D. Kao**, J. Zhang.
The Living Liberia Fabric: An Interactive Narrative Artwork Memorializing Civil War in Liberia
International Symposium on Electronic Art (ISEA), 2013. [presentation]

D. Kao.
Reward Preference in Video Games
Princeton University, Department of Computer Science Technical Report TR-931-12, 2012. [technical report]

Teaching

- **CNIT 58100: HCI Applied to Games and Education**
  Instructor (*Fall 2023, Spring 2023, Fall 2022, Fall 2021, Fall 2020, Spring 2020*)

  Purdue University
  Dominic Kao

- **CNIT 25501: Introduction to Object-Oriented Programming**
  Instructor (*Fall 2023, Spring 2023, Fall 2022, Spring 2022, Fall 2021, Spring 2021, Fall 2020, Spring 2020, Fall 2019, Spring 2019*)

  Purdue University
  Dominic Kao

- **CNIT 59000: Game Programming & Framework**
  Instructor (*Spring 2021*)

  Purdue University
  Dominic Kao

- **CNIT 39900: Creating Unity Games**
  Instructor (*Summer 2019*)

  Purdue University
  Dominic Kao

- **CNIT 39900: Virtual Reality Topics**
  Instructor (*Spring 2019*)

  Purdue University
  Dominic Kao

- **CNIT 31500: Systems Programming**
  Instructor (*Fall 2018*)

  Purdue University
  Dominic Kao

- **6.005: Software Construction**
  Teaching Assistant (*Fall 2014*)

  MIT
  Rob Miller & Max Goldman

- **COS 126: General Computer Science**
  Teaching Assistant (*Spring 2012*)

  Princeton University
  Doug Clark

- **COS 323: Comp. for the Physical and Social Sciences**
  Teaching Assistant (*Fall 2011*)

  Princeton University
  Rebecca Fiebrink

- **COS 116: Computational Universe**
  Teaching Assistant (*Spring 2011*)

  Princeton University
  Sanjeev Arora

- **COS 318: Operating Systems**
  Teaching Assistant (*Fall 2010*)

  Princeton University
  Andy Bavier

Awards

Honorable Mention (ACM Conference on Human Factors in Computing Systems, 2022)
Best Paper Nominee (IEEE Transactions on Games, 2022)
ACM CHI Special Recognitions for Outstanding Reviews (2020, 2021, 2022, 2023)
ACM CHI PLAY Special Recognitions for Outstanding Reviews (2021)
Honorable Mention (ACM Computer-Human Interaction in Play, 2021)
Best Paper Nominee (Foundations of Digital Games, 2020)
Best Student Paper Award (American Educational Research Association Conference, 2017)
Best Paper Honorable Mention (Foundations of Digital Games, 2014)
Natural Sciences and Engineering Research Council of Canada Fellowship (MSc 2010, PhD 2014)
Massachusetts Institute of Technology Travel Scholarship (2014, 2015, 2017)
Undergraduate Academic Excellence Scholarship (2006)
Jason Lang Scholarship (2005, 2006)

Reviewing

AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE) (2019)
ACM Annual Symposium on Computer-Human Interaction in Play (CHI PLAY):
    Reviewer: 2020, 2023, 2024

Associate Chair: 2021, 2022
Video Chair: 2022
ACM Conference on Computer Supported Cooperative Work (CSCW) (2021)
ACM Conference on Human Factors in Computing Systems (CHI):
Reviewer: 2017, 2019, 2020, 2021, 2022, 2024
Late-Breaking Work (LBW) Associate Chair: 2021
Associate Chair: 2022, 2023
ACM Foundations of Digital Games (Program Committee) (2019, 2020, 2021)
ACM Symposium on Virtual Reality Software and Technology (VRST) (2018)
ACM The Web Conference (TheWebConf) (Program Committee) (2022)
ACM Transactions on Computer-Human Interaction (TOCHI) (2022)
American Educational Research Association (AERA) (2017)
Communication Monographs (2022)
Computational Creativity & Games Workshop (Program Committee) (CCGW) (2016)
Computers in Human Behavior (CHB) (2022)
Computer Applications in Engineering Education (CAE) (2019, 2020, 2021)
Entertainment Computing (ENTCOM) (2022, 2023)
Experimental Artificial Intelligence in Games Workshop (Program Committee) (EXAG) (2016, 2017)
Human-centric Computing and Information Sciences (2020)
IEEE Conference on Games (Program Committee) (2021, 2022, 2024)
IEEE Transactions on Games (2019, 2021)
Immersive Learning Research Network (iLRN) (2016, 2017, 2018, 2019, 2020)
Immersive Learning Technologies (JUCS Special Issue) (2019)
International Journal of Human-Computer Interaction (2022, 2023, 2024)
International Journal of Human-Computer Studies (2023)
International Society of the Learning Sciences (ISLS) (2016)
International ICSE Workshop on Games and Software Engineering (GAS) (Program Committee) (2022)
Journal of Artificial Intelligence Review (AIRE) (2017)
Multimodal Technologies and Interaction:
Special Issue Editor for *Innovations in Game-Based Learning*: 2021
MIT CSAIL PhD Admissions Committee (2016)
National Center for Women & Information Technology (NCWIT) (2016, 2017, 2018)
National Science Foundation (NSF) Panel Reviewer (2021)
Review of Educational Research (RER) (2021)

Selected Project Demos

Exigent Automatic Avatar Generation System
`http://tinyurl.com/zpqwjkf`
Automatic photo-to-avatar creator developed in Fall 2013.

Bed of Ashes (RPG) Unity Game
`http://tinyurl.com/n7nezy2`
Game project developed using the Unity game engine during the first two weeks of June 2013.

WiMaps Indoor Location Detection
`http://tinyurl.com/mez3bjy`
Random forest machine learning using WiFi access point data to accurately detect indoor location in Spring 2012.

KaJaM Radio Station Upload System
`http://tinyurl.com/lct2ejn`
End-to-end media upload system now in active use at the MIT Radio Station (WMBR 88.1) in Spring 2013.

Portable Gaming Device
`http://tinyurl.com/pzs5hz9`
Portable gaming device created from scratch with RPG dodging game in 2008.

Eriador Free (RPG) Blackberry Game
http://tinyurl.com/o7snob3
Game project developed for the Blackberry Storm during two weeks in May 2009.

Grants

CAREER: Broadening Participation in Computing through Virtual Identities (2024) (PI, $512,775)
National Science Foundation

Developing and Optimizing Reflection-Informed STEM Learning and Instruction by Integrating Learning Technologies with Natural Language Processing (2023) (co-PI, $300,000)
National Science Foundation

PECAS Mediator: Productive Online Teamwork Engagement Through Intelligent Mediation (2021) (co-PI, $850,000)
National Science Foundation

Gamification of Hygienic Best Practices to Help Prevent the Spread of COVID-19 (2020) (PI, $20,000)
Purdue University

Investigating Faculty Role Models in Academia (2020) (PI, $5,000)
Purdue University

Purdue University IMPACT-X+ (2020) (PI, $2,310.75)
Purdue University

Development of a Computer Game to Measure Flow and Other Psychological Responses (2019) (co-PI, $16,249.95)
Purdue University

IMPACT Program (2019) (PI, $10,000)
Purdue University