MentorPal:
Interactive Virtual Mentors Based on Real-Life STEM Professionals

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ABSTRACT

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ABOUT THE AUTHORS

Benjamin Nye, Ph.D. is the Director of Learning Science at the University of Southern California, Institute of Creative Technologies (USC-ICT). Ben's research tries to remove barriers development and adoption of adaptive and interactive learning technology so that they can reach larger numbers of learners. Dr. Nye's research has been recognized for excellence in intelligent tutoring systems (1rst Place ONR ITS STEM Grand Challenge; Nye, Windsor, et al., 2015; Nye et al., 2014), cognitive agents (BRIMS 2012 best paper; Nye & Silverman, 2013; Nye, 2012), and realistic behavior in training simulations (Federal Virtual Worlds Challenge; Silverman et al., 2012). His research is on scalable learning technologies (Nye et al., 2014) and design principles that promote learning (Nye, Graesser, & Hu, 2014; Nye, 2014; Nye, Morrison, & Samei, 2015). This research has led to 20 peer-reviewed papers, 11 book chapters, and 5 open-source projects. Ben is the membership chair for the International of Artificial Intelligence in Education (IAIED) Society and holds memberships in Educational Data Mining Society (EDM), and Association for the Advancement of Artificial Intelligence (AAAI) He also co-chairs the FLAIRS Learning Technologies track (2015-2017).

William Swartout, Ph.D. is Chief Technology Officer and co-founder of the USC Institute for Creative Technologies and a research professor in the Computer Science Department at the USC Viterbi School of Engineering. His research interests include virtual humans, explanation and text generation, knowledge acquisition, knowledge representation, intelligent computer based education and the development of new AI architectures. Across this work, he has over 80 publications that have received over 8,400 citations. He oversaw the Mission Rehearsal Exercise project, which won awards at NTSA and first place in the 2001 International Conference on Autonomous Agents. Later, he led the NSF-funded museum guides project, which brought ICT-created virtual humans to the Boston Museum of Science, which reached over 250,000 visitors. The project was selected by the NSF for exhibition in their booths at the 2010 AAAS conference and the 2012 USA Science and Engineering Festival in Washington, DC. In 2009, Swartout received the Robert Engelmore Award from the Association for the Advancement of Artificial Intelligence (AAAI). Swartout is a Fellow of the AAAI, has served on their Board of Councilors, and is past chair of the Special Interest Group on Artificial Intelligence (SIGART) of the Association for Computing Machinery (ACM).

Julia C. Campbell, Ed.D. is a Group Leader at the University of Southern California's Institute for Creative Technologies. Her work focuses on cognitive task analysis and assessment of reaction and self-efficacy. More specifically, she has conducted ongoing research aimed at understanding and improving distributed learning through a series of recommendations and best practices for promoting and enhancing student engagement online. She also found that improved engagement in distributed courseware is possible without incurring prohibitive costs, though the returns on learning with these progressive approaches require further research. At USC, Julia earned an M.A. in communication and an Ed.D. in educational psychology.

Dan M. Davis is a consultant for the Institute for Creative Technologies, University of Southern California, focusing on large-scale distributed DoD simulations. At USC's Information Sciences Institute, he was the Director of the JESPP project for JFCOM for a decade. As the Assistant Director of the Center for Advanced Computing Research at Caltech, he managed Synthetic Forces Express, bringing HPC to DoD simulations. Prior experience includes serving as a Director at the Maui High Performance Computing Center and as a Software Engineer at the Jet Propulsion Laboratory and Martin Marietta. He has served as the Chairman of the Coalition of Academic Supercomputing Centers and has taught at the undergraduate and graduate levels. As early as 1971, Dan was writing programs in FORTRAN on one of Seymour Cray's CDC 6500's. He saw duty in Vietnam as a USMC Cryptologist and retired as a Commander, Cryptologic Specialty, U.S.N.R. He received B.A. and J.D. degrees from the University of Colorado in Boulder.

Madhusudhan Krishnamachari is a Research Assistant at the Institute for Creative Technologies of the University of Southern California. He is part of a research group that develops virtual agents that can answer questions in a particular domain and converse with humans. Madhu is responsible for building the dialogue policies that guide the agent in conversations. He earned his B.Tech. in Computer Science from Amrita Vishwa Vidyapeetham (University), Coimbatore, India and will finish his M.S. in CS at the University of Southern California in June of 2017.

Nicholas J. Kaimakis is active in research at the Institute for Creative Technologies of the University of Southern California. His current research thrusts are in the use of computer generated avatars or video clips, animated and directed by natural language optimized Artificial Intelligence (A/I) programs that present a life-like dialogue capability to interact with remote users via the internet. He has demonstrable success designing efficient project structures, teaching programming, and managing multi-faceted teams. His current project is funded by the Navy and is designed to help improve knowledge of STEM fields across varied demographics with the development of an interactive interface that makes STEM information more accessible on-line. He is an undergraduate student studying Computer Science within the Viterbi School of Engineering at the University of Southern California.