

Populating a Virtual Conversation Database: Community Data Collection and Analysis

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ABSTRACT

This paper addresses the issues faced when populating a set of questions that may be posed to mentors, in order to reliably create a large database of video-taped responses, which will be used to answer questions during on-line virtual conversations. The authors relate their experiences in indentifying and selecting the topics that often arise during mentoring. The goal is to create a Natural Language Processing (NLP)-enabled computer agent to respond to questions from mentees, focusing on issues like establishing command relationships and ameliorating early career stresses from family relocations. The paper describes the inception and the goals of the research, and then relates the early conception of the types issues to be included. They report on preliminary evaluations of these results and analyze the perceived adequacy of the impacts. Then, the approach to obtaining a more inclusive range of data is detailed. One part of this approach was the creation of an on-line survey, intended to ethnographically characterize the target population's concerns. The data from this ethnographic survey are presented as an example of how this approach was useful in creating the range of necessary issues to be addressed. With the anticipated exponential growth in both the sophistication and the utilization of Artificial Intelligence and Virtual Humans, this paper will focus on methods and techniques that may be useful in similar situations. The discussion closes with an evaluation of the utility of such approaches, uses to which they may be put, and emerging technologies that may dramatically impact future capabilities.

ABOUT THE AUTHORS

Dan M. Davis is active as a consultant at the Institute for Creative Technologies (ICT), University of Southern California (USC), focusing on large-scale DoD simulations and avatar uses. Prior to retirement, he was the Director of the JESPP project at USC for a decade. As the Assistant Director of Advanced Computing Research at Caltech, he led Synthetic Forces Express, bringing HPC to DoD simulations. He also served as a Director at the Maui High Performance Computing Center and in computer research roles at the Jet Propulsion Laboratory and Martin Marietta. He was 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. While in the Marine Corps, he saw duty in Vietnam as a Cryptologist and retired in 2002 as a Commander, USNR. He received B.A. and J.D. degrees from the University of Colorado in Boulder.

Brian L. Morgan, CAPT, USN, Ret. is currently listed as a member of the Faculty at the Naval Postgraduate School in Monterey California has over six years of experience in the practical application of operations research at the Service headquarter level while assigned to the Assessment Division (OPNAV N81) in the Pentagon. He is a Naval Flight Officer with innumerable hours in E-2s, including duties as an instructor, Chief of Operations Test and Evaluation Branch, National Military Command Center, and Commanding Officer, VAW-117. He is active with his research colleagues at the Naval Postgraduate School in Monterey, Calif. Brian received a BS in Aeronautical Engineering from the University of Virginia and an MS in Operations Research from the Naval Postgraduate School.

Daniel P. Burns, CAPT, USN, Ret. is a lifelong Systems Engineer, first with the Active Duty Navy, then SAIC, and small business. He served as Naval Chair and Professor of Practice in Systems Engineering at the Naval Postgraduate School (NPS). Captain Burns served as the as the Military Associate Dean and as acting Dean of the Graduate School of Engineering and Applied Sciences at NPS. His research interests center on analyses of both

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David H. Barnhill, LCDR, USN, is enrolled the US Naval Postgraduate School (NPS), in Monterey California. He is a student there in the Operations Research Department. He is particularly interested in the analysis of human behavior and command relationships of defense personnel. A topic of immediate concern is the imminent adoption of various levels of robotic and artificial intelligence-controlled weapons on unit cohesion and command functions. He is a Naval Aviator, and has flown rotary-wing aircraft from both land and vessel platforms. David has served in flying status leadership positions and has performed staff officer duties. He graduated from the US Naval Academy with a BS and is scheduled to complete an MS in Operations Research at NPS in the spring of 2021.

Mark C. Davis, Ph.D. is the Chief Technical Officer at Wood Duck Research, Inc, and is semi retired after careers in the US Navy and as a computer design engineer for both IBM and Lenovo. Rising to the level of Distinguished Engineer at Lenovo, he was responsible for the design of laptop computer cross-disciplinary technology, including PC architecture, embedded systems, open source and virtualization. Previous work was with IBM in the areas of software development and architecture involving security, storage and virtualization. Dr. Davis has been granted well over fifty patents that were filed during his service at both companies. He is a graduate of the Duke University NROTC program and was commissioned as an Ensign, attended nuclear power school, and served as a Submarine Officer for twelve years, including one duty tour as a classroom instructor. He left the active duty as a Lieutenant Commander to pursue a PhD. Mark holds a BSEE degree from Duke University and a PhD in Computer Science from the University of North Carolina, where his advisor was Professor Fredrick P. Books.