12/15/2023

Michael Villano, Ph.D.

Curriculum Vitae

University of Notre Dame
Department of Psychology
390 Corbett Family Hall
Notre Dame, IN 46556

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Citizenship: USA

Home
50630 Hollybrook Drive
Granger, IN 46530

Current positions
Research Assistant Professor
Co-Director, Virtual Reality Lab

ORCID ID: 0000-0002-5212-326X

Education

1991 Ph.D., Experimental Psychology, New York University, New York, New York
Dissertation: *Computerized knowledge assessment: Building the knowledge structure and calibrating the assessment routine*
Advisors: Jean-Claude Falmagne and Michael Landy

1986 M. A., Experimental Psychology, New York University

1983 B. A., Psychology; Certificate in Computer Applications (CAPP)
University of Notre Dame, Notre Dame, Indiana

1979 New York State Regents Diploma, St. John the Baptist, Diocesan High School, West Islip, New York

Research Interests

Virtual Reality and 3D Video Game Development, Game Simulations for Moral Dilemmas and Business Strategy, Human-Robotic Interaction, Human-Computer Interaction

Professional History

Research Assistant Professor 2006-Present
University of Notre Dame
Provide research computing consultative services to the Psychology Department in all phases of the software development life cycle: feasibility studies, requirements gathering and analysis, software architecture and user interface design, implementation (coding in more than 20 computer languages/environments), testing/calibration, deployment and maintenance. Collaborate with faculty, graduate students, and undergraduate research assistants to facilitate and promote effective and efficient use and integration of research computing resources and audio/video technologies within their labs, the department, and the university. Act as a liaison to OIT, representing faculty research and support concerns. Faculty supervisor of undergraduate and graduate computer labs. Co-Director of the Notre Dame VR Lab.

Teaching Experience

Current

Spring 2023 Programming for Video Games Development (undergraduate)
Spring 2023 Research Lab (undergraduate, informal)
Spring 2023 Guest lecturer "Psychology: Science, Practice, and Policy" (undergraduate)
Fall 2023 Research Lab (undergraduate, informal)
Fall 2023 Research Methods: Computer Programming (graduate)
Fall 2023 Guest lecturer "Psychology: Science, Practice, and Policy" (undergraduate)

Past

Programming for Video Games Development (undergraduate)
Robot Practicum (undergraduate)
Research Lab (undergraduate, informal)
Virtual Reality Boot Camp – 2-week intensive summer course in Unity VR dev.
Supervision of Independent Study (weekly meetings)
Computers in Psychology (undergraduate)
Special Studies in Computer Applications (undergraduate)
Special Studies in Virtual Reality Development (undergraduate)
Video Game Development – Half-Life 2 Modding
Java Programming
Web Development
Guest lecturer "Psychology: Science, Practice, and Policy" (undergraduate)
Guest lecturer in "Python Scripting" (undergraduate Computer Digital Technologies)
Guest lecturer in "System Interface Design" (undergraduate Computer Science)

Service

Academic

Appointed Chair- Psychology Computer Committee (2007-present)
Appointed Department of Psychology Safety Coordinator (2015-present)
Reviewer, Internal grants, AD&T Discovery Fund (2018, 2019)
Elected member, University Committee on Research, Library, and Special Professional Faculty Appeals (2012-2015)
Appointed member, University Committee on Academic Technologies (UCAT) (2011-2013)
Member- Faculty Advisory Board for the Center for Research Computing (2007-2016)
Coordinator for Cognition, Brain and Behavior Studies Group (CBBSG) (2014-2016)

Ad-hoc Reviewer, Science Robotics
Ad-hoc Reviewer, Transactions of Human-Robot Interaction
Ad-hoc Reviewer, Human-Robotic Interaction Conference (HRI)
Ad-hoc Reviewer, Journal of Mathematical Psychology
Ad-hoc Reviewer, IEEE/RSJ International Conference on Intelligent Robots and Systems
Ad-hoc Reviewer, International Journal of Human-Computer Studies
Ad-hoc Reviewer, International Journal of Social Robotics

Ad-hoc Reviewer, Int'l Journal of Environmental Research and Public Health
Outside reviewer, Maryland Technology Enterprise Institute

Co-Advisor, Julaine Zenk, Ph.D.
Outside Chair, 3 Ph.D. defenses and 1 MA defense
Reader, 6 Ph.D. Defenses
Reader, 10 Masters Defenses
Undergraduate Senior Thesis co-advisor, 2010-present

Community

Scoutmaster, Troop 572, Algonquin District, LaSalle Council (2013-2022)
Supervise and participate in all troop activities for 60 registered scouts: monthly camp outs, weekly troop meetings, service projects, summer camp and individual scout mentoring. Served as Scoutmaster for LaSalle Council Contingent for 2017 National Jamboree. Brotherhood member of the Order of the Arrow National Honor Society. 2021- Received Unit Leader Award of Merit. 2022- Received District Award of Merit. Over 250 nights of camping and over 200 miles of backpacking including the Appalachian Trail, Colorado Trail, and Pictured Rocks National Lakeshore.

District Advancement Chair, Algonquin District, LaSalle Council (2019-2022)
Member of the district advancement committee (monthly meetings) and responsible for interpretation of BSA Advancement policies and sign-off of adult advancement awards.

Volunteer Scribe, Notre Dame Vaccine Event (2021)
Confirmed identity and notated COVID vaccine cards at Compton Ice Arena.

Keyboardist, Notre Dame FTT production of Jesus Christ Superstar (2021)
Member of the rock band performing within the Notre Dame Orchestra for a production of Jesus Christ Superstar. Performed all synthesizer and organ parts at rehearsals and for concert in Notre Dame Stadium.

Associate Advisor, Crew 572 (2012-2018)
Active participant in High Adventure trips, such as a 23-mile hike through Pictured Rocks National Lakeshore and a 21-mile hike on the Appalachian Trail.

Lecturer, Robotics Awareness Week. (Spring 2013)
Presented talks and live demo of Nao robot and its use in research with children with Autism Spectrum Disorder for science classes at St. Pius Catholic School.

Troop Committee Chair, Troop 572, Algonquin District, LaSalle Council (2012-2013)
Conducted rechartering for troop. Attend LaSalle Council Roundtable monthly meetings. Approved new scout and adult applications and Eagle Scout applications.

Assistant Scoutmaster, Ten Weeks to Tenderfoot, Troop 572 (2009-2013)
Updated curriculum, supervised older scout trainers. Conducted Outdoor Cooking demonstration for Parent – Cub Weekend (May 2012, 2013). Supported Scoutmaster on all outings.

Volunteer Penn High School Marching Kingsmen Marching Band, (2006-2014)

Volunteer instructor in jazz combos for Penn High School Jazz Combos (2009-2011)

Coach, MathCounts, Discovery Middle School (2010 – 2011, State Finalist)

Selected Academic Research and Development Projects

2023 Virtual Reality Board Room – In collaboration with Tim Hubbard of Mendoza College of Business and Daniela Aliberti of the Catholic University of the Sacred Heart (Milan), we submitted a manuscript for this project titled, "Understanding Boardroom Gender Diversity Using Virtual Reality: How Women Influence Decisions and Catalyze Strategic Change" to Administrative Science Quarterly, Impact factor: 7.313.

2023 Roboprox VR 4.0 - Developed new VR office environment simulation to study avatar proxemics (physical approachability) using robots, humans, cartoon character and alien avatars with Prof. Tim Hubbard. Initial data collection complete and preliminary data analysis looks promising showing effects or participant gender as well as avatar gender and race (humans).

2023 Lock Luck – With Dr. Adam Czajka of ND Computer Engineering and Agnieszka Marczak-Czajka, Graduate Student. Met weekly with the team to review data analysis of studies examining a participant's emotional reaction to images that have been modified by artificial neural networks as originated by the Google Dreamception project. Completed SPSS analysis of demographics and multiple regression on valence and arousal ratings as they were influenced by image characteristics such as hue, saturation, brightness, and metrics of visual clutter. Preparing manuscript.

2023-24 Senior Thesis – Advised Jaden Kim (junior undergraduate) on senior thesis using VR to measure the effects of audience size and environment on music performance anxiety. Submitted Institutional Review Board (IRB) protocol which was approved. Data collection to begin in Fall of 2023.

2023 Sacred Art VR – minor updates regarding method of computing time artwork was viewed in VR. See more detailed project description below.

2023 Turing Data Analysis – met weekly with undergraduate RA to complete data management of previously run Turing Test experiment.

2022 Roboprox VR 3.0 - Developed updated VR lab environment simulation to study HRI proxemics (physical approachability) using gendered robots and gendered human avatars for senior thesis with Camey Calzolano.

2022 Senior Theses – Advised 3 senior thesis: Camey Calzolano (HRI-Proxemics), Ella Diab (Social Media Addiction and Rumination) and Montserrat Suarez-Espino (Attachment style and Drinking Habits)

2022 RPA Moral Decision-making Family Relation Variation – Developed new variation of RPA (Drone) moral decision-making simulation to vary family member scenario to determine if more specific types of family members (grandfather, grandmother, aunt, uncle etc.) impacted moral dilemma.

2022 Sacred Art VR – For ND team (Radvansky, Brockmole, Jensen [Theology]) and ASU/Fuller/Baylor team. Developed 2 variations of VR simulation that included 3 VR environments (church, museum, and warehouse) that are structurally identical and provide space to view art images to study the effect of environment on art perception. Adjusted materials and props in real-time to recreate realistic large-scale spaces. Instrumented to collect data regarding time spend viewing images and distances to art work. Added randomization of art locations for each participant.

2022 R-Wave Biopac Python Project For Gibson. Developed python utilities to animate (visually beat) attention focal point and stimuli in sync with participant's R-Wave cardiac rhythm as provided by Biopac cardiac monitor.

2022 Creative Dyads and Communication Media – with Diego Gomez-Zara (CSE) and Timothy Hubbard (MCB). Assisted with trial of Human Computer interaction study observing differences in the outcome of a creativity task conducted by dyads in person, over Zoom and in Virtual Reality.

2022 Turing Data Analysis – met weekly with undergraduate RA to complete data management of previously run Turing Test experiment.

2022 Lock Luck – With Dr. Adam Czajka of ND Computer Engineering and Agnieszka Marczak-Czajka, Graduate Student. Met weekly with the team to review data analysis of studies examining a participant's emotional reaction to images that have been modified by artificial neural networks as originated by the Google Dreamception project.

2022 Understanding decision-making of racially insensitive products in a Virtual Boardroom – developed 3D model of racially insensitive Prada monkey figurine and assisted in development of VR simulation.

2021 Color Test – converted laboratory experiment from in lab C# program to Unity on-line for Daniel Schor's PhD final experiment. Constructed user interface for consent and debriefing as well as presentation of Colored grids as stimuli and clickable colored grid for responses.

2021 Virtual Reality Board Room – In collaboration with Tim Hubbard of Mendoza College of Business, continued Unity, and C# development of a virtual board room for study of the effects of the gender ratio of a board of directors on a participant's response to a sexual harassment lawsuit. Developed board room scene with details such as coffee mugs, laptops, and books. Developed logic to collect demographic data and then proceed to run three

different scenes in which a CEO (male or female) is speaking to the participant and board (composed of 6 members that can be either male or female avatars.) Avatars are animated with random starting points to simulate movement within a meeting and look at participant when the participant verbalizes their reasoning. Participants respond to Likert scale questions using a laser pointer in the simulation. All data written to a comma-separated file for later analysis.

2021 Word Lists in Rooms – For Abby Doolen and Dr. Gabriel Radvansky. Constructed 3 different experiments consisting of maps of rooms through which a participant navigates to complete a memory task. Participants are exposed to a list of words in each of two rooms and in the third room, must recall any of the words to which they were just presented. Each of the 3 maps constituted a different on-line study which also included consent forms, instructions screens and debriefing. These 3D video game-based experiments were run in a browser and hosted on Amazon Web Services. The first study contained 40 rooms, the second study over 50 rooms and the third study over 70 rooms.

2021 Rooms with Stories - For Abby Doolen and Dr. Gabriel Radvansky. Developed 3 additional variations of the Word Lists in Rooms experiments in which participants in the last few sets of rooms were exposed to 2 parts of two different stories. The testing of the participants memory of the story contents occurred under a separate survey.

2021 Lock Luck – With Dr. Adam Czajka of ND Computer Engineering and Agnieszka Marczak-Czajka of the ND Center for Research Computing. Met weekly with the team to review, design and develop studies examining a participant's emotional reaction to images that have been modified by artificial neural networks as originated by the Google Dreamception project.

2020 Go No-Go – For Jori Waner. Assisted in the development of GO No-GO task in PsychoPy.

Radvansky - new memory list study in different rooms based on maze of maps
Tim Hubbard VR Boardroom
Lock Luck
RPA study continuation
HRI Poxemics study

Independent Contractor 2016-2019

KBRWyle/USAFSAM

Provided senior technical knowledge and skills for specifying, designing, and developing a 2D Unity and C# based Pilot Assessment Tool (PAT) for the United States Air Force School of Aerospace Medicine. Produced requirements document, conducted weekly agile status calls for reactions to prototypes and led design discussions. Developed and released two versions of the software tool as well as two technical documents regarding its use and multiple data file formats. The first version was validated at the University of Notre Dame (funded by a

$100,000 grant with Dr. Charles Crowell) and the second at the Florida Institute for Human Machine Cognition (IHMC). PAT is in use in several countries as a cognitive abilities screening tool and is employed in research at Wright-Patterson Air Force Base Human Performance Wing and NASA: Langley.

Industry Positions

Senior Software Development Engineer 2002-2006

Qwest Inc.

Supervisors: Lindsey Pardun, Tyson Bunch

Provided senior technical knowledge and skills for specifying, designing, and developing web-based J2EE applications to support the sale of telecommunications products, both through call centers and on-line. Led small development teams responsible for large areas of functionality included in quarterly releases. Conducted requirements reviews, generated development approach and tasks to be completed. Assigned tasks, managed technical implementation and mentored individual developers. Conducted software design and code reviews. Established "Developer Guidelines" web site that provided informal means for 15-person team to share design, implementation and testing notes. Utilized Cactus/JUnit for both unit and integration testing and established guidelines for team use. Completed all development activities on-time and under budget. Self-taught skills in Java Server Pages (JSP), Velocity templates, XMLBeans and Weblogic web services.

Senior Consultant 2001- 02

Comsys Inc. on contract to Qwest Information Technologies Inc.

Supervisor: Lindsey Pardun

Provided expertise in designing, developing and deploying innovative software-based solutions to production environments that provide immediate, measurable improvements to company operations and training. Deployed major new trouble ticketing applications for 4 separate client organizations: DSL (high speed internet), VDSL (video and internet), RCC (Designed Circuits) and VISP (Volume ISP). Implemented proprietary interface to internally-developed system to enable Repair Call Expert (RCE) users to support emergency call forwarding and make busy capability. Refactored and strengthened the overall RCE system infrastructure. Developed and delivered DSL troubleshooting knowledge base and infrastructure as an extension to RCE in collaboration with third party call center, Stream.

Senior Software Engineer 01/2001 - 05/2001

Marketwise Software Inc.
Supervisor: David Nassar
Co-developed J2EE-architected infrastructure to support proprietary day trading application. Applied Object-oriented methodology to create use cases, software interaction sequence diagrams and detailed software scenarios using Together J UML tool. Developed event tracking and initial database infrastructure to record the lifecycle of a trade. Developed initial interface to Island ECN using OUCH protocol. Implemented multi-threaded trading partner simulator and initial web-based trading interface for interactive testing with test symbols in national stock market systems utilizing Java, Weblogic Application server, Oracle and HTML.

Software Development Manager 2000-2001
Distinguished Member of Technical Staff 1999-2000
Member of Technical Staff 1997-99

Qwest Inc., formerly US West Advanced Technologies
Innovative Application Engineering Group
Supervisors: Charles Bloom and Scott Wolff
Provided expertise in designing, developing and deploying innovative software-based solutions to production environments that provide immediate, measurable improvements to company operations and training. Demonstrated ability to identify potential clients; deliver alternative solutions to business problems through data-driven analysis; develop presentations, reports and proposals; and facilitate client-focused meetings. Garnered comprehensive experience in all phases of the software development lifecycle. Acquired skills in various software development methodologies, including Extreme Programming, Agile techniques, Object-Oriented Development, rapid prototyping and Spiral as well as traditional Waterfall models. Researched and practiced human factors methods and principles with an emphasis on user-centered design. Performed requirements gathering and representation as well as computer programming implementation. Installed and configured Apache and I-Planet web servers. Performed system administration, hardware and software evaluation, specification and purchase of PC's and midrange SUN enterprise servers.

Repair Call Expert (RCE) (1998 to 2003)
Repair Billing Expert (RBE) (2001 to 2003)
Code Talker (5/97 to 3/98)

Member of Technical Staff 1992-97

Verizon Inc., formerly Bell Atlantic/NYNEX Science & Technology, Inc.
Human Computer Systems Lab, Human Systems Interfaces Group
Supervisors: Debbie Lawrence and Michael Atwood
Provided advanced technical knowledge and skills for specifying, designing, and developing state-of-the-art computer-based training and collaborative technology-based systems. Provided human factors expertise in the user interface design of the NYNEX Operator Workstation, the Intelligent Field Access System and the Residential Broad Band Video

Service Platform. Designed, developed and deployed a simulation-based trainer for customer service representatives.

ISDN Tutor (1/96 to 5/97)
Residential Broad Band Graphical User Interfaces (1/96 to 5/97)
Collaborative Tools Exploratory Research (1/96 to 12/96)
Intelligent Field Access System (4/94 to 12/95)
PC-MITS (10/93 to 10/94)
Distributed Intelligent Multimedia Education (DIME) (4/93 to 12/94)
Operator Service Digital Interface (OSDI) Intelligent Workstation Interface (9/92 to 4/93)
Keyboard Evaluation for Intelligent Operator Workstation (9/92 to 4/93)

Research Intern 1991-92

Honeywell, Inc., Sensor and Systems Development Center
Supervisor: Edward Cochran, Ph.D.
Provided advanced technical knowledge and skills for specifying, designing, developing and building state-of-the-art Intelligent Tutoring Systems (ITS) and advanced Computer Based Training (CBT). Explored application of Knowledge Space Theory and Bayesian Belief Networks to probabilistic student modeling in an ITS.

HBC TUTOR (2/92 to 9/92)
Intelligent Training Systems Project (1/92 to 6/92)
Computer-Based Diagnostic Testing System Project (10/91 to 5/92)
Intelligent Training Technologies: Application of Artificial Neural Networks to Modeling Student Performance (1/92 to 5/92)

Past Academic and Consulting Positions (graduate and undergraduate)

Research Assistant 1989-91

University of California at Irvine

Completed dissertation research in computerized knowledge assessment. Designed and implemented simulation and numerical analysis software to estimate parameters of probabilistic knowledge structures in C on a CONVEX supercomputer. Supervisor: Professor Jean-Claude Falmagne

Programmer/Analyst 1989-90

University of California at Irvine

Provided UNIX system administration for SUN 3/280 minicomputer server with 12 X-Windows workstations. Maintained and enhanced software for ARIS, a Computer-Assisted Instruction (CAI) course in logic and set theory written in C. Supervisor: Professor Jean-Claude Falmagne

Research Assistant 1984-89

New York University

Developed methodology and software for the comparison of knowledge assessment algorithms. Programmed and analyzed maximum likelihood ratio tests of learning models utilizing various unconstrained optimization functions in FORTRAN and C. Designed and implemented interface to data acquisition program to systematically obtain an expert's knowledge structure. Supervisor: Professor Jean-Claude Falmagne

Programmer/Analyst 1985-89
New York University

Provided UNIX system administration for VAX 750 minicomputer running Berkeley UNIX. Maintained source code for ARIS, a computer-based course in logic and set theory. Supervisor: Professor Jean-Claude Falmagne

Computer Consultant 1984-89
DeSimone Rehabilitation Services Inc., New York

Recommended and installed personal computer hardware and software for all business operations. Developed single IBM PC site into a 10 station LAN running Novell Advanced Netware. Designed and programmed custom software system to store case referrals and generate form letters, mailing labels, invoices and custom reports in Foxbase + LAN. Supervisor: Christina DeSimone

Computer Consultant 1987-89
Expert Ware Inc., New York

Designed and programmed prototype rule-based expert systems for the diagnosis of diabetes and anxiety using EXSYS, and expert systems shell. Supervisor: Dr. Stephen Estrine

Computer Consultant 1984-86
Management Performance Systems Inc., Chicago

Re-designed and implemented user interface and relational database for The Sales Manager's Assistant, a sales call planning, and tracking system developed for Merck, Sharpe and Dohme Inc. in Compiled Basic for the IBM PC. Supervisor: Dr. Charles R. Crowell

Teaching Assistant 1985
New York University

Presented one hour lecture class per week for Introductory Psychology course for Spring Semester. Prepared and graded exams. Supervisor: Adrianne Gans

Computer Consultant 1983-84
Management Performance Systems Inc., Chicago
Programmed a sales call tracking system for the APPLE II+ and IBM personal computers. Designed and programmed a software system to calculate individual work performance measures on the APPLE II+. Supervisor: Dr. Charles R. Crowell

Research Assistant 1981-83
University of Notre Dame
Programmed startle response experiments with rats using SKED on PDP-8 computer. Programmed statistical analysis in SAS on IBM 360 Mainframe. Programmed testing software on Apple II+ computers. Supervisors: Drs. D. Chris Anderson and Charles R. Crowell

Scholarships and Fellowships

University Fellowship, New York University, 1988
National Research Service Award, Dept. of Health and Human Services, 1986
Undergraduate Research Assistant (competitive stipend), University of Notre Dame, Department of Psychology, 1981-82, 1982-83
Notre Dame Scholar, 1979

Honors and Awards

Best Full Paper Award, 2011 IEEE HealthCom Conference for Kennedy, M. W., Schmiedeler, J. P., Striegel, A. D., Crowell, C. R., Villano, M., & Kuitse, J. (2011). Enhanced Feedback in Balance Rehabilitation using the Nintendo Wii Balance Board. *Proceedings of the IEEE Healthcom 2011 - Technology Enabled Personalized Medicine*: IEEE-Healthcom.

Qwest SpiritLinq Award 2005
Several U S West Spot Awards (from both the R&D and client organizations, 1998-2001)
Advanced Technologies Stock Option Grant 2000, 2001
U S West Operations and Technologies President's Club 1998 (Hawaii trip)
Sumae Cum Lader Purple Heart, U S West Advanced Technologies 1998

Google Scholar Statistics (All) as of December 2023

Number of Citations	2273
h-index	16
i10-index	19

Refereed Publications

Mujica, A., Crowell, C., **Villano, M.,** & Uddin, K. (2022). Addiction by design: some Dimensions and Challenges of Excessive Social Media Use. Medical Research Archives, 10(2). doi:10.18103/mra.v10i2.2677

Christen M, Narvaez D, Zenk J. D., **Villano M.**, Crowell C.R., Moore D.R.. (2021) Trolley dilemma in the sky: Context matters when civilians and cadets make remotely piloted aircraft decisions. *PLoS One*.16(3):e0247273. doi: 10.1371/journal.pone.0247273. eCollection 2021. PMID: 33755672; PMCID: PMC7987167.

Crowell, C. R., Deska J. C., **Villano, M**., Zenk, J., Roddy, J. T. Jr (2019). Anthropomorphism of Robots: Study of Appearance and Agency. *JMIR Hum Factors*. Vol. 6, No. 2:e12629 URL: https://humanfactors.jmir.org/2019/2/e12629 DOI: 10.2196/12629 PMID: 31094323 PMCID: 6533876

Zenk, J., Crowell, C. R., **Villano, M**., Kaboski, J., Tang, K., & Diehl, J.J. (2017). Unconventional Students in Robotics and HRI Education: A Review of Two Initiatives. *Journal of Human Robot Interaction: Special Issue on HRI Education*. Vol. 6, No. 2 (pp. 92-110) https://dl.acm.org/doi/10.5898/JHRI.6.2.Zenk

Fuhs, M. W., McNeil, N. M**.,** Kelley, K., O'Rear, C. & **Villano, M.** (2016). The role of non-numerical stimulus features in approximate number system training in preschoolers from low-income homes. *Journal of Cognition and Development*, Vol. 17, (pp. 737-764).

Kennedy, M.W., Crowell, C.R., **Villano, M**, Schmiedeler, J.P. (2016) Effects of Filtering the Center of Pressure Feedback Provided in Visually Guided Mediolateral Weight Shifting. *PLoS ONE* 11(3): e0151393. doi:10.1371/journal.pone.0151393

Kaboski, J.R., Diehl, J.J., Beriont, J., Crowell, C.R., **Villano, M.**, Wier, K., & Tang, K. (2015) Brief Report: A pilot summer robotics camp to reduce Social anxiety and improve social/vocational skills in adolescents with ASD. *Journal of Autism and Developmental Disorders*. doi 10.1007/s10803-014-2153-3 Springer Science and Business Media, New York.

Cunningham, T., Crowell, C., Alger, S., **Villano, M**., Mattingly, S., & Payne, J. (2014). Psychophysiological arousal at encoding leads to reduced reactivity but enhanced memory after a period of sleep. *Neurobiology of Learning and Memory*, http://dx.doi.org/10.1016/j.nlm.2014.06.002. IF = 3.327

Christen, M., Narvaez, D., **Villano, M**., Serrano, J., & Crowell, C.R., (2014) Measuring the moral impact of operating "drones" on pilots in combat, disaster management and surveillance. Proceedings of the European Conference on Information Systems (ECIS) 2014, Tel Aviv, Israel, June 9-11, 2014, ISBN 978-0-9915567-0-0.

Diehl, J.J., Crowell, C.R., **Villano, M**., Wier, K., Tang, K., & Riek, L. (2014). The clinical applications of robots in the diagnosis and treatment of Autism Spectrum Disorders (ASD). In V.B. Patel, V.R. Preedy, and C.R. Martin (Eds.), *A comprehensive guide to autism* (pp. 411-422). Springer Publishing.

Newkirk, J.T., Tomšič, M., Crowell, C. R., **Villano, M.**, & Stanišić, M. M. (2013) Measurement and Quantification of Gross Human Shoulder Motion. *Applied Bionics and Biomechanics*, Vol. 10, pp. 159-173, DOI 10.3233/ABB-140083, IOS Press.

Kennedy, M.W., Crowell, C.R., Striegel, A.D., **Villano, M.**, & Schmiedeler, J.P., (2013). Relative efficacy of various strategies for visual feedback in standing balance activities, *Experimental Brain Research*, vol. 230, no. 1, pp. 117-125.

Diehl, J.J., Crowell, C.R., **Villano, M.**, Wier, K, & Tang, K. (2013). Robots as co-therapists in behavior therapy for individuals with autism spectrum disorder. *Autism Spectrum News 6(1),* 14.

Biggs, A. T., Kreager, R. D., Gibson, B. S, **Villano, M.**, & Crowell, C. R. (2012). Semantic and affective salience: The role of meaning and preference in attentional capture and disengagement. *Journal of Experimental Psychology: Human Perception and Performance.* Apr; 38(2):531-41. doi: 10.1037/a0027394. Epub 2012 Mar 5.

Diehl, J.J., Schmitt, L.*, Crowell, C.R., & **Villano, M.** (2012). The clinical use of robots for children with autism spectrum disorders: A critical review. *Research in Autism Spectrum Disorders, 6(1),* 249-262. doi: 10.1016/j.rasd.2011.05.006. PMCID: PMC3223958. Impact Factor: 2.907 (2012).

Kennedy, M. W., Schmiedeler, J. P., Striegel, A. D., Crowell, C. R., **Villano, M.**, & Kuitse, J. (2011). Enhanced Feedback in Balance Rehabilitation using the Nintendo Wii Balance Board. *Proceedings of the IEEE Healthcom 2011 - Technology Enabled Personalized Medicine*: IEEE-Healthcom.

Villano, M., Crowell, C. R., Wier, K. Tang, K., Thomas, B., Shea, N., Schmitt, L. M., & Diehl, J. J. (2011). DOMER: A Wizard of Oz Interface for Using Interactive Robots to Scaffold Social Skills for Children with Autism Spectrum Disorders. *Proceedings of the 4th ACM IEEE International Conference on Human-Robot Interaction*, Lausanne, Switzerland: ACM/IEEE.

Crowell, C. R., Scheutz, M., Schermerhorn, P., & **Villano, M.** (October 2009) Gendered Voice and Robot Entities: Perceptions and Reactions of Male and Female Subjects. In The Proceedings of the 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS '09), St. Louis, MO, Institute of Electrical and Electronics Engineers(IEEE)

Harp, S. A., Samad, T. & **Villano, M.** (1995) Modeling student knowledge with self-organizing feature maps. *IEEE Transactions on Systems, Man, and Cybernetics, 25*(5),727-737.

Kambouri, M., Koppen, M., **Villano, M.**, & Falmagne, J.-C. (1994). Knowledge assessment: tapping human expertise by the QUERY routine. *International Journal of Human-Computer Studies, 40*, 119-151.

Bloom, C., Bullemer, P., Chu, R., **Villano, M.** (1992). A task-driven approach to knowledge acquisition, analysis and representation for intelligent training systems. *Proceedings of the International Conference on Systems, Man and Cybernetics* (pp. 509-514). Chicago: Vol 1.

Villano, M. (1992). Probabilistic student models: Bayesian belief networks and knowledge space theory. *Proceedings of the Second International Conference on Intelligent Tutoring Systems* (pp. 491-498). New York: Springer-Verlag, Lecture Notes in Computer Science Vol 608.

Bloom, C., **Villano, M.** & VanLehn, K. (1992). *Application of artificial intelligence technologies to training systems: Computer-based diagnostic testing system* (Contract No. F41624-91-C-5002). Brooks AFB, TX: Technical Training Research Division, Human Resources Directorate.

Villano, M. (1991). Computerized knowledge assessment: Building the knowledge structure and calibrating the assessment routine (Doctoral dissertation, New York University, 1991). *Dissertation Abstracts International, 52-12B.*

Falmagne, J. –C., Doignon, J. –P., Koppen, M., **Villano, M.**, Johannesen, L. (1990). Introduction to knowledge spaces: How to build, test and search them. *Psychological Review, 97*(2), 201-224.

Philips, J., **Villano, M.,** Crowell, C.R., Setzer, M., & Miller, A.E. (1986). Typing versus menu selection for data entry: In search of the crossover point for maximum efficiency. In *Proceedings of the Academic Microcomputer Conference, 2*, (pp. 157-169). Indianapolis.

Crowell, C., & **Villano, M.** (1983). *Micro-Proctor User's Guide*. Newton, MA: Allyn & Bacon.

Papers Under Review / Submitted / In Preparation

Crowell, C. R., Kajzer, M., **Villano, M.**, Striegel, A., O'Brien, K., & Schmeideler, J. P. (submitted). Toward the Optimization of Visual CoP Feedback in Balance Training and Rehabilitation. *JNER*.

Crowell, C. R., Kajzer, M., **Villano, M.**, Striegel, A., O'Brien, K., and Schmeideler, J. P. (submitted). Balance performance with visual feedback in older subjects compared to young healthies and clinical populations. *Smart Health*.

Diab, E., Crowell, C.R. & Villano, M. (In preparation) Online Self Disclosure as a Form of Co-rumination and its Contribution to Online Social Media Addictiveness in College Students.

Hubbard, T.D., Aliberti, D. & **Villano, M.** (submitted) Understanding Boardroom Gender Diversity Using Virtual Reality: How Women Influence Decisions and Catalyze Strategic Change.

Hames, J., Rose, N., Lam, J., **Villano, M**. & Cougle, J. (in preparation) Comparing the Efficacy of a Single-Session Virtual Reality Treatment for Acrophobia to a Gold Standard Treatment and No Treatment.

Jeter, A., **Villano, M.**, Zenk, J. & Crowell, C. R. (in preparation) Gender identification in an imitation game using the Turing test format.

Research in Progress

Villano, M. & Rahill, D. Measuring Gender Differences in Human-Robot Proxemics with Virtual Reality (Data collection complete)

Zenk, J. D., **Villano, M.** & Crowell, C. R. A Further Exploration into Moral Decision-Making in a Military Context (Data collection complete)

Boncoeur, D., Hubbard, T.D. & **Villano, M.** Understanding decision-making of racially insensitive products in a Virtual Boardroom (Data collection complete)

Calzolano, C., **Villano, M.** & Crowell, C. R. Measuring Proxemics of Gendered Robots vs. Human Avatars in Virtual Reality (Data collection complete)

Villano, M., Jeter, A., Spittell, A., Crowell, C. R. Real-life Turing Test (Data collection complete)

Marczak-Czajka, A., Czajka, A., Crowell, C. R., Zenk, J., **Villano, M.** Affective Reactions to Dreamception Imagery (Data collection complete)

Refereed Book Chapters

Hubbard, T. & **Villano, M.** (2023) How to Cross the Uncanny Valley: A Synthesis of Developing Studies Using Virtual Reality. In J. Busenbark (Ed.) *Research Methods in Strategic Management. Vol. 18.* Bingley, UK: Emerald Publishing.

Crowell, C. Segerson, J., Kajzer, M., **Villano, M.**, Zenk, J., Wegner, V., Bell, M. (2020). Using Luring Communication Theory to Analyze the Behavior of Online Sexual Offenders. In M. Khosrow-Pour (Ed.) *Encyclopedia of Criminal Activities and the Deep Web* (Chapter 37) Hershey, PA: IGI Global. doi:10.4018/978-1-5225-9715-5

Presented Papers / Panels / Workshops / Posters

Hubbard, T.D., Aliberti, D. & **Villano, M.** (2022) Crossing the Uncanny Valley: Understanding Board Gender Composition Using Virtual Reality Simulations. Presentation at the Strategic Management Society's Special Conference. Milan, Italy.

Lam, J. C., Rose, N. S., **Villano, M.** Cougle, J. R. & Hames, J. L. (2019, March) Comparing the Efficacy of a Single-Session Virtual Reality Treatment for Acrophobia to a Gold Standard Treatment and No Treatment. Poster session. Anxiety and Depression Conference 2019, Chicago, IL.

Crowell, C.R., **Villano, M**., Moore, D., Zenk, J., Ley-Han, C., & Kang, S., (2018, April). Validation of a pilot assessment tool. Poster presented at the 88th annual Rocky Mountain Psychological Association Conference, Denver, CO. 2/5/2019

Crowell, C.R., **Villano, M**., Moore. D., Zenk, J., Mendez-Lynch, B., Pickhinke, T., & Williams, A. (2018, April). Moral decision making in remotely piloted aircraft: Does morality play a part in pilot decision making? Poster presented at the 88th annual Rocky Mountain Psychological Association Conference, Denver, CO.

Zenk, J., Crowell, C. R., **Villano, M**., Kaboski, J., Tang, K., & Diehl, J.J. (2018, March). Unconventional Students in Robotics and HRI Education: A Review of Two Initiatives. Paper presented at the 13th ACM IEEE International Conference on Human-Robot Interaction, Chicago, IL.

Villano, M., Moore, D., Zenk, J., Crowell, C.R., Christen, M. (2017, October) *Moral Decision-making in a Remotely Piloted Aircraft (RPA) Simulation.* Invited conference speaker. Technology-Enhanced Warfare: Perspectives from Ethics and Social Science. University of Notre Roman Global Gateway.

Crowell, C.R., **Villano, M**., Moore, D., Chapa, J., Burton, S., Schwartz, A., Marshall, S., & Grattan, M. (2017, May). Decision making and stress reaction of remotely piloted aircraft pilots. In Remote Combat Stress Impact and Mitigation: ISR in the Kill Chain. Panel Presentation at the 87 annual meeting of the Aerospace Medical Association, Denver, CO.

Crowell, C.R., **Villano, M**., Moore, D., Chapa, J., Schwartz, A., Burton, S., Marshall, S., & Grattan, M. (2017, May). Moral decision making for the RPA pilot. Poster presented at the 19th International Symposium on Aviation Psychology, Dayton, OH.

Villano, M. (2015, November). *Results of a Remotely Piloted Aircraft (RPA) simulation study.* Invited speaker, Workshop: The transformation of war through information technology and its impact on the ethics and law of armed conflicts- the example of "drones". University Research Priority Program Ethics, University of Zurich.1

Villano, M., Crowell, C. R. & Christen, M. (June, 2015) *An experimental study of moral decision making in operation Remotely Piloted Aircraft (RPAs/drones).* Presenter, Warfighter Effectiveness Research Center, United States Air Force Academy.

Musolff, J., Portenier, D., Diehl, J. J., **Villano, M.** & Crowell, C. R. (May, 2015*) The effects of an interactive robot on increasing communication skills for children with autism spectrum disorders.* Poster presented at the International Meeting for Autism Research, Salt Lake City, UT.

Diehl, J.J., Kaboski, J, Beriont, J., **Villano, M.**, Tang, K., Miller, H., Flatley, A, Hartman, N., Kawalec, K., Prough, M., Simon, L., Van Steenwyk, H., McWherter, W., Won, M., & Crowell, C.R. (2015, May). *Using a summer robotics camp to reduce social anxiety and improve social/vocational skills in ASD.* Poster presented at the International Meeting for Autism Research, Salt Lake City, UT.

Tang, K., Dammann, A., Won, M., Hartman, N., Flatley, A., Kawalec, K., Van Steenwyk, H., Crowell, C. R., **Villano, M.**, Wier, K., & Diehl, J. J. (2015, May). *Great expectations: The influence of parent outcome expectancies on social skills gains in children with autism spectrum disorder.* Poster presented at the meeting of International Meeting for Autism Research, Salt Lake City, UT.

Villano, M. (2014, October). *An experimental study of decision making in operating Remotely Piloted Aircraft (RPAs/drones).* Invited speaker, Workshop: Technology-mediated tragic decisions in military, cybersecurity, and humanitarian crises. University Research Priority Program Ethics, University of Zurich.

Kaboski, J., Beriont, J., Crowell, C. R., **Villano, M.**, Tang, K., Miller, H., Crown, T., Mcwherter, W., Gorman, T., Won, M., Zenk, J., Wier, K., & Diehl, J.J., (2014, May) *Summer robotics camp: a pilot social/vocational intervention for adolescents with ASD and their peers.* Poster presented at the International Meeting for Autism Research (IMFAR), Atlanta, GA.

Cunningham, T., Crowell, C., **Villano, M**., Mattingly, S., Kensinger, E., & Payne, J. (2013). *Psychophysiological Reactivity at Encoding Predicts Memory for Negative Items After a Night of Sleep.* Poster presentation at the annual Associated Professional Sleep Society Conference, Baltimore, MD.

Cunningham, T., Crowell, C., **Villano, M**., Mattingly, S., & Payne, J. (2013). *Increased heart rate deceleration at encoding predicts memory for negative items only after a night of sleep.* Poster presentation at the annual Society for Psychophysiological Research Meeting, Florence, Italy.

Cunningham, T., Crowell, C., **Villano, M.**, Mattingly, S., & Payne, J. (2013). *Sleep's depotentiating effect on heart rate deceleration and skin conductance response.* Poster presentation at the annual Society for Psychophysiological Research Meeting, Florence, Italy.

Kajzer, M., Crowell, C.R., & **Villano, M.** (2013). *Using chat utterances to predict Internet child sexual offending.* Poster presented at the 121st Annual American Psychological Association Convention. Honolulu, HI.

Kajzer, M., Crowell, C.R., **Villano, M.**, Zenk, J. & Segerson, J. (May 2013). *Using chat evidence to predict child or sexual offender.* Poster accepted at the 25th Annual Association for Psychological Science Convention. Washington, DC.

Vernon, J., Kumar, J., **Villano, M**., Crowell, C.R., Wier, K., Tang, K., Zona, J., Portenier, D., & Diehl, J.J. (2013, May). NAO-BASE: A multimedia database to support socially-assistive robotics for individuals with autism spectrum disorder. To be presented at the International Meeting for Autism Research in San Sebastián, Spain.

Diehl, J.J., Crowell, C.R., **Villano, M**., Wier, K., Tang, K., Van Ness, M., Flores, J., Freeman, T.*, Klinepeter, E., Matthews, S., Mazur, S., & Shea, N. (2013, May). Humanoid robots as co-therapists in ABA therapy for children with autism spectrum disorder. Presented at the International Meeting for Autism Research in San Sebastián, Spain.

Musolff, J.A., Portenier, D.C., Crowell, C.R., **Villano, M**., & Diehl, J.J. (2013, July). Using an interactive robot to scaffold social skills for children with autism spectrum disorder. Presented at the National Autism Conference, State College, PA.

Villano, M. (2013, March). Killing or letting die - drone dilemmas as an instrument to assess the impact of the virtualization of warfare on human morality. In M. Christen (Chair), Assessing *the use of video games for understanding and influencing human morality.* Symposia conducted at the 43rd Annual meeting of the Popular Culture Association, Washington, DC.

Cunningham, T., Crowell, C. R., **Villano, M.**, Mattingly, S., Kensinger, E., and Payne, J. (2012). *The effect of REM sleep on the emotional memory trade-off effect, cortisol awakening response, and psychophysiological reactions to negatively rated scenes.* Poster presentation at the annual Associated Professional Sleep Society Conference, Boston, MA.

Cunningham, T., Crowell, C. R., **Villano, M.**, Mattingly, S., Kensinger, E., and Payne, J. (2012). *Emotional memory and psychophysiological regulation following a night of sleep.* Poster presentation at the annual Association for Psychological Science Convention, Chicago, IL.

Vernon, J., Kumar, J., **Villano, M.**, Crowell, C. R. Wier, K., Tang, K., Zona, J., Portenier, D., & Diehl, J. J. (2012). Nao-Base: A Multimedia Database to Support Socially-Assistive Robotics for Individuals with Autism Spectrum Disorder. Poster presentation at College of Science, Fall Research Expo, University of Notre Dame.

DiPiero, K., Stoddart, R., Diehl, J. J., **Villano M.**, Crowell, C. R., & Wier, K. Improvement in Eye Contact for Children with Autism Spectrum Disorder: Robot or Human Intervention? (May, 2012) Eighty-Fourth Annual Meeting Midwestern Psychological Association, Chicago, IL: MPA, May, 2012.

Klinepeter, E.A., Shea, N.M., Thomas, B., Van Ness, M., Kumar, J., Mazur, S.L., Millea, M.A., Wier, K., Tang, K., **Villano, M.**, Crowell, C.R., & Diehl, J.J. (2012, May). The effect of a co-robot therapist on repetitive behaviors during applied behavior analysis in individuals with autism spectrum disorders. Presented at the International Meeting For Autism Research, Toronto, Canada.

Tang, K., Diehl, J. J., **Villano, M.**, Wier, K., Thomas, B., Shea, N. M., DuBois, Z., Millea, M. A., Uhland, K. A., & Crowell, C. R. (2011, May). Enhancing empirically-supported treatments for autism spectrum disorders: A case study using an interactive robot. Poster session presented at the meeting of the International Meeting for Autism Research, San Diego, CA.

Villano, M., Crowell, C. R., Wier, K. Tang, K., Thomas, B., Shea, N., Schmitt, L. M., & Diehl, J. J. (2011). DOMER: A Wizard of Oz Interface for Using Interactive Robots to Scaffold Social Skills for Children with Autism Spectrum Disorders. *Poster session of the 4th ACM IEEE International Conference on Human-Robot Interaction*, Lausanne, Switzerland: ACM/IEEE.

Biggs, A. T., Kreager, R. D., Gibson, B. S., Crowell C. R., & **Villano, M.** (November, 2010) Semantic and affective salience: The role of meaning and preference in attention. Presented poster. St. Louis, MO. Object, Perception, Attention & Memory (OPAM).

Kreager, R. D., Biggs, A. T., Gibson, B. S., **Villano, M.** & Crowell C. R. (November, 2010) Effects of need-based stimuli on attentional capture and interference. Presented poster. St. Louis, MO. Object, Perception, Attention & Memory (OPAM).

Kreager, R.D., Crowell, C.R., & **Villano, M. A.** (October, 2010) Context Effects on Imitation: How Action Context Can Modulate Imitation Performance. Paper presented at the 2010 Indiana Academy of Social Sciences Annual Meeting, Indianapolis, IN.

Mangini, M., **Villano, M. A.**, & Crowell, C. R. (May, 2010) Visual Short term Memory for One Item. Annual Meeting of the Vision Sciences Society, Naples, FL: VSS.

Boker, S., Cohn, J., Theobald, B., Lucey, S., Matthews, I., Mangini, M., Spies, J., **Villano, M.**, Brick, T., Ambadar, Z., Ashenfelter, K. (September, 2007) Coordinated Motion and Facial Expression in Dyadic Conversation. Presented Poster. Washington, DC. National Science Foundation (NSF) Workshop on Human and Social Dynamics.

Bloom, C. P., Wolff, A. S., Lesgold, A., Loftin, R. B., Elsom-Cook, M., **Villano, M.** (1995). Facilitating Intelligent Tutoring Technology Transfer. Panelist. In Greer, J. (Ed.), *Proceedings of AI-ED 95- 7th World Conference on Artificial Intelligence in Education* (p.603). Charlottesville, VA: Association for the Advancement of Computing in Education (AACE).

Villano, M. (1995, September) Invited workshop participant in Dede, C. Integrating Learning and Working. In Guzdial, M. and Weingarten, F. (Eds.) *Setting A Computer Science Research*

Agenda For Educational Technology (pp.32 -40). Washington, DC: Computing Research Association (CRA).

Radlinski, B., Atwood, M. E., **Villano, M.** (1994). DIME: Distributed Intelligent Multimedia. Formal Demonstration. In Plaisant, C. (Ed.), *CHI'94 Human Factors in Computing Systems Conference Companion* (pp.15-16), New York: The Association for Computing Machinery.

Radlinski, B., Atwood, M. E., **Villano, M.** (1993, August). DIME: Distributed Intelligent Multimedia. *U S West Consortium on Intelligent Tutoring Systems (ITS)*, Boulder CO.

Bullemer, P. T., Chu, R. W., Kodali, N. and **Villano, M.** (1993, August). The Home and Building Control Fundamental Tutor. *U S West Consortium on Intelligent Tutoring Systems (ITS)*, Boulder CO.

Chu, R. W. and **Villano, M.**. (1993). Application of Knowledge Space Theory for Student Modeling. In *Proceedings of the 1993 Conference on Intelligent Computer-Aided Training and Virtual Environment Technology*, (p. 92). Houston, TX: NASA.

Bullemer, P. T., Chu, R. W., Kodali, N. and **Villano, M.** (1993). The Home and Building Control Fundamental Tutor: A Design Framework for Multimedia Instruction of Declarative Concepts. In *Proceedings of the 1993 Conference on Intelligent Computer-Aided Training and Virtual Environment Technology*, (p. 58). Houston, TX: NASA

Villano, M., Kambouri, M., Koppen, M., & Falmagne, J.-C. (1990, August). Empirical Construction of a Knowledge Structure. In J.-P. Doignon and J.-C. Falmagne (Chairs), *Combinatoric and Geometrical Representations*. Symposium conducted at the workshop on Measurement and the Mathematical Representations of Empirical Structures, Irvine, CA.

Kambouri, M., Koppen, M., **Villano, M.**, & Falmagne, J.-C. (1989, April). *Knowledge assessment: Tapping human expertise*. Paper presented at the Eastern Psychological Association Convention, Boston, MA.

Technical Reports

Villano, M. & Crowell. C. R. (2018) *Performance Assessment Tool (PAT): User Documentation Version 2.4*, Department of the Air Force, United States Air Force School of Medicine, Air Force Research Laboratory, 711th Human Performance Wing, Wright Patterson AFB, Dayton, OH.

Villano, M. & Crowell. C. R. (2018) *Performance Assessment Tool (PAT): Documentation of Configuration, Momentary and Summary Data Files Version 2.4*, Department of the Air Force, United States Air Force School of Medicine, Air Force Research Laboratory, 711th Human Performance Wing, Wright Patterson AFB, Dayton, OH.

Villano, M. (2006) *Automated Address Format Correction and Address Validation*. *Technical Report,* Qwest Information Technologies, Denver, CO.

Villano, M. (2004) *800 Number Ordering Automation: System Architecture and Design Document*. *Technical Report,* Qwest Information Technologies, Denver, CO.

Habermehl, K. & **Villano, M.**, (2001) *Repair Call Expert System Software Architecture Document*. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Villano, M., (1999) *Repair Call Expert System Administration Guide*. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Villano, M., Habermehl, K., & Kaplanski, I. (1997) *Code Talker Customer Access System Test Plan*. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Villano, M., Habermehl, K. & Hurley, D. (1997) *Code Talker Customer Access System Document Roadmap*. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Villano, M., Habermehl, K. & Bain, L. (1997) *Code Talker Customer Access System Data Dictionary*. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Villano, M., Habermehl, K., Bain, L. & Weich, C. (1997) *Code Talker Customer Access System Use Cases*. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Villano, M., Habermehl, K., & Dooley, S. (1997) *Code Talker Customer Access System Operations Guide*. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Villano, M. & Bain, L. (1997) *Code Talker Customer Access System Customer Processes*. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Villano, M. Stein, J. & Lawrence, D. (1996) *Video Service Platform: Graphical User Interface Style Guide*. Bell Atlantic - NYNEX Technical Report, *TM96-0075*, White Plains, NY.

Bloom, C., Bullemer, P., Chu, R., **Villano, M.** (1992). A task-driven approach to knowledge acquisition, analysis and representation for intelligent training systems. *Technical Report,* US West Advanced Technologies, Boulder, CO.

Grant Activity Summary

Total Applied	$8,089,277
Total Awarded	$2,254,509
External Applied	$6,211,663
External Awarded	$1,921,233
Internal Applied	$538,166
Internal Awarded	$333,276
Proposed	$1,339,448

Grant Activity

- Proposed: (External) NSF, "Collaborative Research: HCC: MEDIUM: Exploring Extended Reality's Capabilities for Science and Innovation", Lead PI: Diego Gomez-Zara, Role: PI, $749,192 (2023)
- Proposed: (External) NSF, "Examining the effects of virtual reality on team creativity", Lead PI: Diego Gomez-Zara, Role: PI, $590,256 (2023, Resubmit)
- Funded: (External) NSF, "Assessing the Impact of Sacred Art on Individual Experience, Memory, and Spiritual Understanding" Lead PI: Robin Jensen, Role: Key Participant, $922,793 (2022)
- Declined: (External) NSF, "Examining the effects of virtual reality on team creativity", Lead PI: Diego Gomez-Zara, Role: PI, $424,696 (2023)
- Declined: (Internal) ND Office of Research, "Renewal and Upgrade of the VR Systems in the Notre Dame Virtual Reality Laboratory", Lead PI: Michael Villano, Role: PI. $139,890 (2022)
- Submitted: (External) NIH, "Pathways Linking Early Adversity and Support to Behavioral and Physical Health", Lead PI: Kristen Valentino, Role: PI. PI Allocation $93,925 (2021)
- Declined: (External) APA, "Crossing the Uncanny Valley: Using Virtual Reality to Simulate Diversity in Corporate Boardrooms", Lead PI: Timothy Hubbard, Role: PI. PI Allocation $10,000 (2021)
- Funded: (External) Kemper Professor Award Grant, Kemper Foundation, $25,000, PI: Timothy Hubbard. Role: Co-PI. (2021)
- Declined: (External) Epic Mega Grant, Epic Games Inc. $25,000, CO-PI with Timothy Hubbard. (2021)

- Declined: Brain Research Foundation, "Supporting Mental Healing Process with AI-generated Visual Stimuli", Lead PI: Adam Czajka, Role: Key Participant. PI Allocation $24,765 (2020)
- Funded: (Internal) ISLA Small Grant Proposal for Two Internet-based Studies: Intelligence Officer Militaristic Dilemmas and Judgements of Inceptionism Images. $2,445 (2020) Role: PI.
- Funded: USAFSAM Pilot Physiological and Cognitive Performance program (P2CP). $25,000 private contract to modify the Pilot Assessment Tool (PAT Version 2.0), a real-time, computer-based cognitive performance assessment tool. (2018) Role: PI.
- Funded: (Internal) AT&D Discovery Fund (2017) "Comparing the Efficacy of a Single-Session Virtual Reality Treatment for Acrophobia to a Gold Standard Treatment and No Treatment". $43,354. PI: Jennifer Hames. Role: Co-PI.
- Funded: (Internal) Digital Learning Initiatives (2017) $2,000 Virtual Reality Bootcamp Role: PI
- Funded: (Internal) Digital Learning Initiatives – internal grant (2017) $111,500 Role: Co-PI
- Funded: USAFSAM Pilot Physiological and Cognitive Performance Program (P2CP). $100,000 research award to complete assessment study at the University of Notre Dame and the United States Air Force Academy (USAFA) of the Pilot Assessment Tool (PAT), a real-time, computer-based cognitive performance assessment tool (2016). Role: Co-PI.
- Funded: USAFSAM Pilot Physiological and Cognitive Performance program (P2CP). $100,000 private contract to develop the Pilot Assessment Tool (PAT), a real-time, computer-based cognitive performance assessment tool. (2016) Role: PI.
- Funded: Air Force Office of Scientific Research (AFOSR) 2016, "Real-Time Adaptive Communication Displays for Shared Situation Awareness between Human Machine Teams." Subtitle:" Research Area II: Moral Decision Making", $390,000 with option for additional $130K as part of a 3 year, $2.4M grant to PI: Dr. Victor Finomore, USAFA. Role: Co-PI.
- Funded: Air Force Office of Scientific Research (AFOSR) 2016. Role: Co-PI $125,000
- Funded: (Internal) Henkels Large Grant (2016) $20,000. Co-PI with Crowell (PI) and Howard.
- Declined: (Internal) Global Collaborative Initiative (2015) $20,000 Notre Dame Rome Gateway. Co-PI with Crowell, Christen, & Howard.
- Declined: (Internal) Henkels Large Grant (2015) $30,000. Co-PI with Crowell (PI) and Howard.
- Funded: Wells Fargo Foundation, "Summer Robotics Camp to Improve the Social/Vocation Skills for Adolescents with Autism Spectrum Disorder (ASD) and Their Peers" (2014), $10,000. Role: Co-PI with Diehl, Crowell, Kuboski, & Wier.

- Funded: (Internal) Rodney F. Ganey Collaborative Community-based Research Mini-grant (2013) $7,000 Role: Co-PI with Kaiser and Crowell.
- Declined: Autism Speaks (2013) $135,000 Role: Co-PI with Diehl, Crowell and Wier.
- Declined: National Institute of Justice (2013) $866,072 Co-PI with Crowell, Kajzer & D'Mello.
- Declined: Autism Speaks (2012) $119,268 Co-PI with Crowell, Diehl & Wier.
- Declined: NSF National Robotics Initiative, (2011) $1,845,661: Role: Co-PI with Crowell, Riek and Diehl.
- Declined: CDMRP- Autism Research Program (2011), $147,954 Role: Co-PI with Crowell, Diehl and Bowyer. Role: Co-PI.
- Funded: Arby's Foundation (2011) $23,500 Role: Co-PI with Diehl, Crowell, Dunlap and Wier.
- Funded: NSF Course Curriculum and Laboratory Improvement (CCLI)," Curriculum and Laboratory Development Through 3-D Interfacing via the Nintendo Wiimote", (2009), $199,940, Aaron Striegel, PI. Charles Crowell and Amitabh Chaudhary, Co PIs, Role: Senior Scientist.
- Funded: (Internal) ISLA Small Research and Creative Work Grant: Aldebaran Robotics training and iPad development (2011), $2,498 Role: PI.
- Funded: (Internal) ISLA Travel Grant for HRI 2011, Lausanne, Switzerland (2011) $1,869, Role: PI.
- Funded: (Internal) Rodney F. Ganey Collaborative Community-based Research Mini-grant, "Using Interactive Robots to Scaffold Social Skills for Children with Autism" (2010), $7,000 Role: Co-PI (with Diehl and Crowell).
- Funded: (Internal) CTSI ND-PDT, "Use of Visual Feedback with the Nintendo Wii System in Rehabilitation of Balance among Acute Stroke Patients", (2010), $12,988, Role: Senior Scientist with Striegel, Crowell and Schmiedeler.
- Funded: (Internal) CTSI ND-PDT, "Enhancing Social Skills Interventions for Children with Autism through Interactive Robots" (2010), $19,984, Role: Senior Scientist with Diehl and Crowell.
- Declined: (Internal) ISLA-Matching Funds (2009), $15,000 Co-PI with Davis and Crowell.
- Declined: NSF-CPATH (2009), $297,844 Co-PI with Crowell, Chaudary and Striegel.
- Funded: (Internal) ND – ISLA (2008) $7,117 Role: Co-PI with Crowell.
- Declined: NWIGC (2008), $56,000 Co-PI with Crowell and Mangini.
- Declined: NSF-PAC (2007), $338,170 Co-PI with Crowell.
- Funded: (Internal) Equipment Restoration and Renewal Grant, University of Notre Dame Office of Research**, "**Integrated Physiology/Multi-Modal Laboratory Equipment Renewal Proposal" (2006), $95,521, with Chow & Crowell. Role: Co-PI.

PhD Thesis Directed

Co-advisor to Julaine Zenk, 2020, "A Modified Trolley Problem Procedure for Studying Dilemmic Decisions"

Master's Thesis Directed

Co-advisor to Julaine Zenk, 2018, "A Modified Trolley Problem Procedure for Studying Dilemmic Decisions"
Co-advisor to Mitchell Kajzer, 2014, "Memorability of Computer Security as Affected by Message Type"
Co-advisor to Ryan Kreager, 2010, "Investigating the Automaticity of Imitation: Imitative versus Complementary Actions"

Undergraduate Senior Thesis Directed

Jaden Kim, 2023, "Music Performance Anxiety in VR"
Camey Calzolano, 2022, "Gender Effects on VR Proxemics in Human Robotic Interaction"
Ella Diab, 2022, "Using online self-disclosure as a form of co rumination and how it contributes to social media addictiveness"
Montserrat Suarez-Espino, 2022, "A Correlation Study Exploring the Possible Link Between Adult Attachment Style, Personality, and Drinking Habits in College Students"
Dan Rahill, 2020, "Measuring Gender Differences in Human-Robot Proxemics with Virtual Reality"

Professional Memberships

American Psychological Society (2008 – present)

Technical Expertise

Computer Languages: C#, python, Matlab, C++, Visual Basic, VBA, jsPsych, E-Prime, J2EE, Java, Struts, Velocity, Perl, JavaScript, XML, XSLT, HTML, FORTRAN, xbase, Oracle Forms, SQL, dmdx, PRAAT scripting, C, DOS scripting, sh and bourne shell scripting
Operating Systems: Windows 11/10/7/XP, DOS, Mac OS, Unix/Linux (Ubuntu, Fedora, RedHat, Solaris)
Hardware: PC's, Mac's, Various Unix, and Linux hardware platforms, HTC Vive VR
Applications: Unity, Visual Studio, Qualtrics, pyCharm, SPSS, Character Creator, iClone, PsychoPy, Netbeans, Maya, Praat, Subversion, Eclipse, Dimensions (PVCS), CVS, Toad, Microsoft .Net, Microsoft Office Suite, Visio, Paintshop Pro, GIMP, Audacity, etc.
Web/Application Servers: Amazon Web Services (AWS), Installation and configuration of Weblogic, Tomcat and Apache servers, XAMPP
Grid Computing/Networking: Condor, rsync, Ethernet, TCP/IP
Video Game Development: Unity/C#, Maya, Mudbox, Half-Life 1&2 modding using Source SDK, custom C++ coding for in-game stimuli presentation and data recording

Digital Audio and Video Recording: Working knowledge of various digital audio and video recording techniques, hardware, and software applications, such as Action!, Cakewalk, SONAR, Goldwave, Fraps, SONY Acid Pro and SONY Vegas Studio.

Additional Training

- Advanced 3D Animation Class using Maya 2016 (audited entire Spring semester 2016)
- Introductory 3D Animation Class using Maya 2016 (audited entire Fall semester 2015)
- Aldebaran Nao Robot Programming (Week long) Workshop, 04/2011
- Analyzing Requirements and Defining Microsoft .NET Solution Architectures 03/2004
- Developing XML Web Services Using Microsoft Visual C# .NET 01/2004
- Programming with Microsoft ADO.NET 10/2003
- CHI '95 tutorials: “Introduction to Object-Oriented Design” and “Diversity and Depth in Participatory Design”.
- CHI '94 tutorials: “Model-Based Interface Development” and “User Modeling and User-Adapted Interaction”.

Media Links

2019 On-line article - "ND Law students consider virtual reality's impact on legal profession"
https://law.nd.edu/news-events/news/law-practice-technology-virtual-reality/

2018 On-line article – "Faculty hope to make virtual reality the next frontier in treating phobias"
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