

Daniel Carruth, Ph.D.

Center for Advanced Vehicular Systems
Mississippi State University
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Education

Ph.D., Cognitive Science.

Mississippi State University, 2008.

Dissertation: Assessing Impact of Instruction Treatments on Positive Test Selection in Hypothesis Testing.

Advisor: Gary L. Bradshaw.

B.S., Computer Science

Mississippi State University, 2001.

Professional Positions

Interim Associate Director, Advanced Vehicle Systems. July 2017 – Present.

Center for Advanced Vehicular Systems
Mississippi State University, Mississippi State, MS

Associate Director, Human Factors. July 2011 – Present.

Center for Advanced Vehicular Systems
Mississippi State University, Mississippi State, MS

Assistant Research Professor. July 2009 – Present.

Center for Advanced Vehicular Systems
Mississippi State University, Mississippi State, MS

Research Associate I. April 2006 – July 2009.

Center for Advanced Vehicular Systems
Mississippi State University, Mississippi State, MS

Research/Teaching Assistant. August 2002 – December 2005.

Department of Psychology
Mississippi State University, Mississippi State, MS
Classes: Cognitive Science, Abnormal Psychology, General Psychology, Cognitive Skills Models.

Research Funding

External Research Funding

High-Quality Simulation for Maintenance Transit Operator Training. (2018). Mississippi Department of Transportation (MDOT), PI: **D Carruth**, J McGinley. Amount: \$74,534.

Virtual Learning Lab: Risk Assessment Training Module. (2017). Toyota Motor Manufacturing Mississippi, PI: **D Carruth**, Key Personnel: S Deb, M Hamilton. Amount: \$100,318.

Proving Ground and Dismounted Troops Topic Area 4: Computational Prototyping and Proving Ground Environment: Task 1 Human Interactions for the Computational Proving Ground. (2017-2020). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman, J Usher, D May, C Bethel. Amount: \$1,326,688.

Proving Ground and Dismounted Troops Topic Area 4: Computational Prototyping and Proving Ground Environment: Task 2 HPC-based Vision Systems for the Computational Proving Ground. (2017-2020). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman. Amount: \$683,245.

Analytics and Data Sciences Topic Area 2: Big Data Analytics Task 4: Web-based User Interfaces for Specification of Simulation Data and Parameters. (2017-2020). US Army ERDC, PI: **D Carruth**. Amount: \$364,212.

Big Data Visualization Topic Area 2: Big Data Analytics Task 1: Augmented and Virtual Reality Methods for Visualizing ERS Tradespace Data. (2017-2020). US Army ERDC, PI: E Swan, CoPI: **D Carruth**. Amount: \$1,506,896.

Human Factors and Ergonomics Occupant-Centric Design Framework for CRES-GV Ground Vehicle Design Concept Analysis Tools (Continuing Funding – Year 5). (2017). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman, T Garrison. Amount: \$171,903.

Virtual Testbed Environments for CRES-GV Ground Vehicle Design Concept Analysis Tools (Continuing Funding – Year 5). (2017). US Army ERDC, PI: **D Carruth**, CoPI: C Bethel, T Garrison. Amount: \$293,926.

Interactive and Collaborative Workspaces for Exploration of Ground Vehicle Design Concepts (Continuing Funding – Year 5). (2017). US Army ERDC, PI: C Bethel, CoPI: **D Carruth**. Amount: \$255,087.

FedEx Project ISE-02. (2017). FedEx Express, PI: L Strawderman, CoPI: C Bethel, **D Carruth**, J Mohammadi-Aragh. Amount: \$169,334.

Human Factors and Ergonomics Occupant-Centric Design Framework for CRES-GV Ground Vehicle Design Concept Analysis Tools (Continuing Funding – Year 4). (2016). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman, T Garrison. Amount: \$171,903.

Virtual Testbed Environments for CRES-GV Ground Vehicle Design Concept Analysis Tools (Continuing Funding – Year 4). (2016). US Army ERDC, PI: **D Carruth**, CoPI: C Bethel, T Garrison. Amount: \$293,926.

Interactive and Collaborative Workspaces for Exploration of Ground Vehicle Design Concepts (Continuing Funding – Year 4). (2016). US Army ERDC, PI: C Bethel, CoPI: **D Carruth**. Amount: \$255,087.

SimBRS WD59: Big Data Analytics for ERS Tradespace. (2016). US Army TACOM, PI: R King, CoPI: L Wang, L Bian, H Medal, JR Burt, M Rais-Rohani. Responsible portion: \$122,646.

SimBRS WD62: HPC-based Sensor Analytics. (2016). US Army TACOM, PI: R King, D Anderson, E Swan, J Ball, H Medal, **D Carruth**. Amount: \$1,199,995. Responsible Portion: \$158,832.

SimBRS WD64: Virtual Prototyping of Vehicle Systems. (2016). US Army TACOM, PI: R King, CoPI: D Marcum, N Shamsaei, F Vahedifard, S Thompson, K Walters, **D Carruth**. Amount: \$2,799,990. Responsible Portion: \$372,000.

Human Factors and Ergonomics Occupant-Centric Design Framework for CRES-GV Ground Vehicle Design Concept Analysis Tools (Continuing Funding – Year 3). (2015). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman, T Garrison. Amount: \$165,583.

Virtual Testbed Environments for CRES-GV Ground Vehicle Design Concept Analysis Tools (Continuing Funding – Year 3). (2015). US Army ERDC, PI: **D Carruth**, CoPI: C Bethel, T Garrison. Amount: \$271,067.

Interactive and Collaborative Workspaces for Exploration of Ground Vehicle Design Concepts (Continuing Funding – Year 3). (2015). US Army ERDC, PI: C Bethel, CoPI: **D Carruth**. Amount: \$277,711.

Framework for Autonomous Vehicle Navigation. (2015). FedEx Express, PI: **D Carruth**, CoPI: L Strawderman, Amount: \$81,591.

Transportation Safety. (2015). FedEx Express, PI: L Strawderman, CoPI: T Garrison, K Babski-Reeves, **D Carruth**. Amount: \$144,744.

Providing Dynamic Environments for Integrated Virtual Prototyping. (2015). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman, J Usher, D May, C Bethel. Amount: \$337,949.

Evaluation of Human-Product Interfaces: Models of Sensing. (2015). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman. Amount: \$166,785.

Human Factors and Ergonomics Occupant-Centric Design Framework for CRES-GV Ground Vehicle Design Concept Analysis Tools (Continuing Funding). (2014). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman, T Garrison. Amount: \$128,366.

Virtual Testbed Environments for CRES-GV Ground Vehicle Design Concept Analysis Tools (Continuing Funding). (2014). US Army ERDC, PI: **D Carruth**, CoPI: C Bethel, T Garrison. Amount: \$287,511.

Interactive and Collaborative Workspaces for Exploration of Ground Vehicle Design Concepts (Continuing Funding). (2014). US Army ERDC, PI: C Bethel, CoPI: **D Carruth**. Amount: \$215,126.

Integrating Dynamic Environments for Unmanned Ground Vehicle Simulation. (2014). Consortium for Energy, Environment, & Demilitarization (CEED), PI: **D Carruth**, CoPI: L Strawderman, J Usher, D May, C Bethel. Amount: \$326,839.

Occupant Centric Framework: Effective Field of View. (2014). Consortium for Energy, Environment, & Demilitarization (CEED), PI: **D Carruth**, CoPI: L Strawderman. Amount: \$162,499.

Human Factors and Ergonomics Occupant-Centric Design Framework for CRES-GV Ground Vehicle Design Concept Analysis Tools. (2013). US Army ERDC, PI: **D Carruth**, CoPI: L Strawderman, T Garrison. Amount: \$128,507.

Virtual Testbed Environments for CRES-GV Ground Vehicle Design Concept Analysis Tools. (2013). US Army ERDC, PI: **D Carruth**, CoPI: C Bethel, T Garrison. Amount: \$321,061.

Interactive and Collaborative Workspaces for Exploration of Ground Vehicle Design Concepts. (2013). US Army ERDC, PI: C Bethel, CoPI: **D Carruth**, L Strawderman, T Garrison. Amount: \$225,349.

Improving Safety of Vulnerable Road Users: Effectiveness of Environment and In-Vehicle Warning Systems at Intermodal Interchanges. (2012). National Center for Intermodal Transportation and Economic Competitiveness, PI: **D Carruth**, CoPI: L Strawderman. Amount: \$140,556 (\$70,278 internal cost-share)

Assessing Human Capability as a Constraint in Energy Management System Design. (2011). Navy ESRDC, PI: **D Carruth**. Amount: \$142,959

Investigation of Law Enforcement Officer Driving Behavior and Performance in an Advanced Driving Simulator. (2010). National Institute of Justice, PI: C. Williams, CoPI: **D Carruth**. Amount: \$190,931

Investigation of the Effects of Increased Coverage Area for Soft Body Armor - Extension. (2010). National Institute of Justice (NIJ), PI: K Babski-Reeves, CoPI: **D Carruth**. Amount: \$82,958

Improving Behavior and Visualization of Entities in Battle Scenario Simulation for TARDEC Ground Vehicle Simulation Lab (GVSL) - Extension. (2010). TARDEC/Army, PI: G McFadyen, CoPIs: **D Carruth**, J McGinley, Z Rowland. Amount: \$400,000

Improving Behavior and Visualization of Entities in Battle Scenario Simulation for TARDEC Ground Vehicle Simulation Lab (GVSL). (2009). TARDEC/Army, PI: G McFadyen, CoPIs: K Babski-Reeves, **D Carruth**, J McGinley, Z Rowland. Amount: \$359,998

Using Virtual Soldier Research (VSR) to Determine the Work Required to Integrate Cognitive Architecture/Modeling into the TARDEC Ground Vehicle Simulation Lab (GVSL). (2008). TARDEC/Army, PI: G McFadyen, CoPIs: K Babski-Reeves, **D Carruth**, J McGinley, Z Rowland. Amount: \$84,933

Virtual Soldier Research; Human Factors Development and Evaluation. (2007). TARDEC/Army, PI: Z Rowland, CoPIs: K Babski-Reeves, **D Carruth**, G McFayden, J McGinley. Amount: \$750,000

Investigation of the Effects of Increased Coverage Area for Soft Body Armor. (2007-2009). National Institute of Justice (NIJ), PI: K Babski-Reeves, CoPIs: **D Carruth**, J McGinley. Amount: \$227,704

Mississippi Active Shooter Training Evaluation. (2007). Bureau of Justice Assistance (BJA), PI: Lt. K Rogers, CoPI: **D Carruth**. Amount: \$87,074

Validation of Optimization-Based Formulations and Performance of Dynamic Human Models: A Comparison of Real and Simulated Design Assessments. (2006). TARDEC/Army, PI: Z Rowland, CoPIs: K Babski-Reeves, **D Carruth**, G McFayden, J McGinley. Amount: \$1,162,820

Internal Research Funding

Human Performance Lab Virtual Reality Enhancements (2015). Center for Advanced Vehicular Systems Internal Funding, PI: **D Carruth**, Co-PI: H Chander, A Knight, Amount: \$100,000.

Human Factors Issues in UAV Operations: an Evaluation of Transfer of Controls between Operators (2013). Raspet Flight Laboratory Internal Funding, PI: **D Carruth**, Co-PI: L Strawderman, Amount: \$10,000.

Driver Behavior and Performance Working Group (2012). ORED Interdisciplinary Cross-College Research Internal Funding, PI: **D Carruth**, Amount: \$2,000

Micro-Air Vehicle Emergency Responder-Investigator Collaboration: Human Factors and Robotics Research Initiative (2011). Bagley College of Engineering Internal Funding, PI: **D Carruth**, Amount: \$3,795

Human Factors Working Group Support (2011). Bagley College of Engineering Internal Funding, PI: **D Carruth**, Amount: \$1,500

Sports Performance Program Extension. (2011). CAVS Internal Funding, PI: **D Carruth**, Amount: \$23,000

Down Syndrome Working Group (2010). ORED Interdisciplinary Cross-College Research Internal Funding, PI: S Agiovlasis, Co-PIs: B Hale, A Knight, **D Carruth**, Amount: \$2,000

Driver Behavior and Performance Working Group (2010). ORED Interdisciplinary Cross-College Research Internal Funding, PI: **D Carruth**, Amount: \$2,000

Human Factors Issues in UAV Operations: an Initial Review of Interface Usability (2010). Raspet Flight Laboratory Internal Funding, PI: L Strawderman, Co-PIs: K Babski-Reeves, **D Carruth**, Amount: \$24,832

Human Factors Working Group Support (2010). Bagley College of Engineering Internal Funding, PI: **D Carruth**, Amount: \$2,000

Sports Performance Program Proposal. (2010). CAVS Internal Funding, PI: **D Carruth**, Co-PI: G McFadyen, Amount: \$31,438

Fidelity of Human Performance in Simulated Tasks Using Accelerometer-Based Game Controllers. (2008). CAVS Internal Funding, PI: **D Carruth**, Amount: \$10,000

Law Enforcement Research Initiative. (2006). CAVS Internal Funding, PI: **D Carruth**, Co-PI: Mark Thomas, Amount: \$37,338

Publications

Refereed Journal Publications

1. Durst, P.J., Goodin, C.T., Bethel, C.L., Anderson, D.T., **Carruth, D.W.**, & Lim, H. (in press). A Perception-Based Fuzzy Route Planning Algorithm for Autonomous Unmanned Ground Vehicles. *Unmanned Systems*.
2. Louine, J. L., May, D., **Carruth, D. W.**, Bethel, C. L., Strawderman, L., & Usher, J. (published online, May 2018). Are Black Robots Like Black People? Examining How Negative Stigmas about Race Are Applied to Robots. *Sociological Inquiry* Wiley Online Publishers. <https://onlinelibrary.wiley.com/doi/abs/10.1111/soin.12230>
3. Strawderman, L., **Carruth, D.W.**, Sherman-Morris, K., Menard, P., Warkentin, M., & McNeal, K. (in press). Individual transportation decisions under conditions of risk and uncertainty. *Natural Hazards*. <https://doi.org/10.1007/s11069-018-3232-0>

4. Chander, H., Knight, A.C., Garner, J.C., Wade, C., **Carruth, D.W.**, DeBusk, H. & Hill, C.M. (2018). Impact of military type footwear and workload on heel contact dynamics during slip events. *International Journal of Industrial Ergonomics*, 66, 18-25.
5. Turner, A.J., Swain, J.C., McWhirter, K.L., Knight, A.C., **Carruth, D.W.**, & Chander, H. (2018). Impact of occupational footwear and workload on lower extremity muscular exertion. *International Journal of Exercise Science*, 11(1), 331-341.
6. Deb, S., Strawderman, L., **Carruth, D. W.**, DuBien, J., Smith, B. K., & Garrison, T. M. (2017). Development and Validation of a Questionnaire to Assess Pedestrian Receptivity toward Fully Autonomous Vehicles. *Transportation Research Part C: Emerging Technologies*, 84, 178-195. <http://dx.doi.org/10.1016/j.trc.2017.08.029>
7. Deb, S., Strawderman, L., DuBien, J., **Carruth, D.W.**, Smith, B., & Garrison, T. (2017, in press). Evaluating pedestrian behavior at crosswalks: Validation of a pedestrian behavior questionnaire for the U.S. population. *Accident Analysis and Prevention*, 106, 191-201. <http://dx.doi.org/10.1016/j.aap.2017.05.020>.
8. Usher, J., McCool, R., Strawderman, L., **Carruth, D.W.**, Bethel, C.L., & May, D. (2017). Simulation modeling of pedestrian behavior in the presence of unmanned mobile robots. *Simulation Modelling Practice and Theory*, 75, 96-112. <https://doi.org/10.1016/j.simpat.2017.03.012>
9. Strawderman, L., Campbell, S., May, D., Bethel, C. L., Usher, J., & **Carruth, D. W.** (2017). Understanding Human Response to the Presence and Actions of Unmanned Ground Vehicle Systems in Field Environments. *IEEE Transactions on Human-Machine Systems IEEE*, 99, 1-12.
10. Strawderman, L., King, K., & **Carruth, D.** (2017; available online). Improving Safety of Vulnerable Road Users: Effectiveness of Environment and In-Vehicle Warning Systems at Intermodal Exchanges. *Journal of Transportation Safety & Security*. <http://dx.doi.org/10.1080/19439962.2016.1237598>.
11. Deb, S., **Carruth, D.W.**, Sween, R., Strawderman, L., & Garrison, T. (2017; available online). Efficacy of virtual reality in pedestrian safety research. *Applied Ergonomics*, 65, 449-460. <http://dx.doi.org/10.1016/j.apergo.2017.03.007>.
12. May, D. C., Holler, K. J., Bethel, C.L., Strawderman, L., Carruth, D.W., & Usher, J. (2017). Survey of Factors for the Prediction of Human Comfort with a Non-anthropomorphic Robot in Public Spaces. *International Journal of Social Robotics*, 9(2), 165-180. <http://dx.doi.org/10.1007/s12369-016-0390-7>.
13. Burch, R. F., Strawderman, L., & **Carruth, D.** (2016). Ruggedized Handheld Device Input Effectiveness by Generation: A Time and Error Study. *International Journal of Industrial Ergonomics*, 54, 146-153. <http://dx.doi.org/10.1016/j.ergon.2016.06.001>.

14. Thomas, M.D., & **Carruth, D. W.** (2015). Active Shooter Training: Data based recommendations for retraining depreciable skills. *Journal of Law Enforcement*. 4(3), 1-21.
15. McCarley, J.S. & **Carruth, D. W.** (2004) Oculomotor scanning and target recognition in luggage x-ray screening. *International Journal of Cognitive Technology*, 9(2), 26-29.

Conference Papers

1. Hudson, C., Bethel, C.L., **Carruth, D.W.**, Pleva, M., Ondas, S., & Juhar, J. (to be presented August 2018). Implementation of a Speech Enabled Virtual Reality Training Tool for Human-Robot Interaction. *Proceedings of the World Symposium on Digital Intelligence for Systems and Machines DISA 2018*. Kosice, Slovakia.
2. Hudson, C., Goodin, C., Doude, M., & **Carruth, D.W.** (to be presented August 2018). Analysis of Dual LIDAR Placement for Off-Road Autonomy using MAVS. *Proceedings of the World Symposium on Digital Intelligence for Systems and Machines DISA 2018*. Kosice, Slovakia.
3. Hudson, C., Deb, S., **Carruth, D.W.**, Frey, D., & McGinley, J. (to be presented July 2018). Pedestrian perception of autonomous vehicles with external interacting features. In *Proceedings of the Applied Human Factors and Ergonomics* . Orlando, FL.
4. Sun, Y., & **Carruth, D.W.** (to be presented July 2018). How does presence of a human operator companion influence people's interaction with a robot? In *Proceedings of the Applied Human Factors and Ergonomics*. Orlando, FL.
5. Baca, J., Carruth, D.W., Davis, E., & Waddell, D. (to be presented July 2018). Merging the cultures of design and engineering: A case study. In *Proceedings of HCI International 2018*. Las Vegas, NV.
6. Durst, P.J., Monroe, G., Bethel, C.L., Anderson, D.T., & **Carruth, D.W.** (May 2018). A history and overview of mobility modeling for autonomous unmanned ground vehicles, Proc. SPIE 10643, Autonomous Systems: Sensors, Vehicles, Security, and the Internet of Everything, 106430G. <https://doi.org/10.1117/12.2309570>
7. **Carruth, D. W.** (2017). Virtual Reality for Education and Workforce Training. *Proceedings of the 15th International Conference on Emerging eLearning Technologies and Applications (ICETA 2017)*, Sary Smokovec, Slovakia: IEEE.
8. Hudson, C. R., Bethel, C. L., **Carruth, D. W.**, Pleva, M., Juhar, M., & Ondas, S. (2017). Training Tool for Speech Driven Human-Robot Interaction Applications. *Proceedings of the 15th International Conference on Emerging eLearning Technologies and Applications (ICETA 2017)*, Sary Smokovec, Slovakia: IEEE.

9. Rahman, M.M., Strawderman, L., & **Carruth, D. W.** (2017). Effect of Driving Contexts on Driver Acceptance of Advanced Driver Assistance Systems. *Proceedings of the HFES 2017 International Annual Meeting*, Austin, TX.
10. Pleva, M., Juhar, J., Cizmar, A., Hudson, C.R., **Carruth, D.W.**, & Bethel, C.L. (2017). Implementing English Speech Interface to Jaguar Robot for SWAT Training. *Proceedings of the 15th IEEE International Symposium on Applied Machine Intelligence and Informatics (SAMI 2017)*. Herl'any, Slovakia: IEEE.
11. **Carruth, D.W.**, & Bethel, C.L. (2017). Challenges with the Integration of Robotics into Tactical Team Operations. *Proceedings of the 15th IEEE International Symposium on Applied Machine Intelligence and Informatics (SAMI 2017)*. Herl'any, Slovakia: IEEE.
12. Sween, R., **Carruth, D.W.**, Waddell, D.M., & Furuichi, M. (2016). Development of an Effective Pedestrian Simulator for Research. *7th International Conference on Applied Human Factors and Ergonomics 2016*, July 27-31, Orlando, FL.
13. Asif, K.M., Bethel, C.L., & **Carruth, D.W.** (July 2016). Iterative Interface Design for Robot Integration with Tactical Teams. *7th International Conference on Applied Human Factors and Ergonomics 2016*, July 27-31, Orlando, FL.
14. Garrison, T.M., Jensen, L.T., Cagle, L.D., McGinley, J., **Carruth, D.W.**, Bethel, C.L., Goodin, C., & Durst, P. (July 2016). Conducting a Prospective Review for Enhanced Interface Features for Unmanned Ground Vehicle Operation. *7th International Conference on Applied Human Factors and Ergonomics 2016*, July 27-31, Orlando, FL.
15. Jensen, L.T., Garrison, T.M., **Carruth, D.W.**, Bethel, C.L., Durst, P., & Goodin, C. (July 2016). Initial Performance Assessment of a Control Interface for Unmanned Ground Vehicle Operation Using a Simulation Platform. *7th International Conference on Applied Human Factors and Ergonomics 2016*, July 27-31, Orlando, FL.
16. King, M.D., Jinkerson, J.L., Garrison, T.M., Irby, D., & **Carruth, D.W.** (July 2016). A Quantitative Comparison of Operator Field of View for Vehicle Design. *7th International Conference on Applied Human Factors and Ergonomics 2016*, July 27-31, Orlando, FL.
17. Hudson, C.R., Lalejini, A., Odom, B., Bethel, C.L., **Carruth, D.W.**, Durst, P.J., & Goodin, C. (2015). ANVEL-ROS: The integration of the robot operating system with a high-fidelity simulator. *2015 NDIA Ground Vehicle Systems Engineering and Technology Symposium*, August 4-6, 2015, Novi, MI.
18. Bethel, C., **D. Carruth**, T, Garrison, and R. King. (2015). Robot Needs Assessment and Issues Discovered from Tactical SWAT Team Exercises. *NATO CSO STO AVT-241/RSM-022 Technological and Operational Problems Connected with UGV Application for Future Military Operations*, April 20-22, 2015, Rzeszów, Poland.

19. Lalejini, A., Duckworth, D., Sween, R., Bethel, C., & **Carruth, D.** (2014). Evaluation of supervisory control interfaces for mobile robot integration with tactical teams. *2014 IEEE International Workshop on Advanced Robotics and its Social Impacts*. Evanston, IL.
20. Arya, A. S., Anderson, D. T., Bethel, C. L., & **Carruth, D.** (2013, May). Multi-kernel aggregation of local and global features in long-wave infrared for detection of SWAT teams in challenging environments. In *SPIE Defense, Security, and Sensing* (pp. 87440O-87440O). International Society for Optics and Photonics. Best Student Paper Award.
21. Bethel, C.L., Eakin, D., Anreddy, S., Stuart, J.K., & **Carruth, D.** (2013). Eyewitnesses are Misled by Human but Not Robot Interviewers. *Presented at the 8th ACM/IEEE International Conference on Human Robot Interaction 2013*, Tokyo, Japan.
22. Bethel, C.L., **Carruth, D.**, & Garrison, T. (2012). Discoveries from integrating robots into SWAT team training exercises. *10th IEEE International Symposium on Safety, Security, and Rescue Robotics*, College Station, TX.
23. Garrison, T., Williams, C., & **Carruth, D.** (2012). Sources of Cognitive Load in a Simulated Law Enforcement Patrol Task. In *Proceedings of the 4th International Conference on Automotive User Interfaces and Interactive Vehicular Applications* (AutomotiveUI '12), Portsmouth, NH.
24. Blackledge, C., **Carruth, D.W.**, Babski-Reeves, K., Close, D., & Wilhelm, M. (2009). Effects of Body Armor Design on Upper Body Range of Motion. In *Proceedings of the Human Factors and Ergonomics Society Annual Conference*, October 19-23, San Antonio, TX.
25. Close, D., Babski-Reeves, K., **Carruth, D.W.**, Blackledge, C., & Wilhelm, M. (2009). Usability Assessment of Body Armor Design Impacts on Task Performance and User Perceptions. In *Proceedings of 53rd Annual Meeting of the Human Factors and Ergonomics Society*, San Antonio, TX.
26. Patnaik, S.S, McGinley, J., Babski-Reeves, K., **Carruth, D.W.**, & McFadyen, G. (Mar 2008). Biomechanical Validation of Digital Human Models: A posture and motion study with Digital Human Models. *Proceedings of Institute of Biological Engineering Conference '08*, Chapel Hill, NC.
27. Brou, R. J., Doane, S. M., **Carruth, D. W.**, & Bradshaw, G. L. (2007). Pilot expertise and instrument failure: Detecting failure. In *Proceedings of the 51st Annual Meeting of the Human Factors and Ergonomics Society*, Baltimore, MD.
28. **Carruth, D. W.**, Thomas, M., Robbins, B., & Morais, A. (2007). Integrating Perception, Cognition, and Action for Digital Human Modeling. In *Proceedings of HCI International 2007*, Beijing, China.

29. Thomas, M., **Carruth, D. W.**, Robbins, B., McGinley, J., & Morais, A. (2007). Modeling Human Bipedal Navigation in a Dynamic Three Dimensional Virtual Environment. In *Proceedings of HCI International 2007*, Beijing, China.
30. **Carruth, D. W.** & Duffy, V. (2005). Towards integrating cognitive models and digital human models. In *Proceedings of HCI International 2005*, Las Vegas, NV.
31. Wu, T., Duffy, V., Kang, J., **Carruth, D. W.**, Tian, R., & Rowland, Z. (2005). Validation of the Virtual Build Methodology for Automotive Manufacturing. In *Proceedings of HCI International 2005*, Las Vegas, NV.
32. Jodlowski, M., **Carruth, D. W.**, Lowe, D., & Doane, S. M. (2003) Knowledge Scoring Engine (KSE) for Real-Time Knowledge Base Generation. In *Proceedings of the 12th Conference on Behavior Representation in Modeling and Simulation*, (pp. 435-437), May 12-15, Scottsdale, AZ.
33. Doane, S.M. & **Carruth, D. W.** (2002). Tutoring real-time dynamic task performance: Using ADAPT to augment pilot skill acquisition. In *Proceedings of the 24th Annual Meeting of the Cognitive Science Society*, Fairfax, VA.
34. Vickery, R.J., Keen, T.R., Moorhead, R.J., Brou, R.J., **Carruth, D. W.** (2002). Volume Visualization of 5D Sedimentation Models. In *Proceedings of Electronic Imaging Science & Technology Visualization and Data Analysis Conference*, R.F. Erbacher, P.C. Chen, M. Groehn, J.C. Roberts, and C.M. Wittenbrink, (Eds.) Proc. SPIE 4465, 12 pages, Jan 21-22, 2002, San Jose, CA.

Peer-Reviewed Conference Abstracts

1. Chander, H., Knight, A.C., Garner, J.C., Wade, C., DeBusk, H., Wilson, S.J., Gdovin, J.R., Hill, C.M. & **Carruth, D.** (2017). Muscle Activity during Postural Stability Tasks: Role of Military Footwear and Workload. *Proceedings of the 2017 American Society of Biomechanics Annual Conference*, Boulder, CO.
2. Wilson, S.J., Chander, H., Knight, A.C., Garner, J.C., Wade, C., Luginsland, L., Hill, C.M., Gdovin, J., DeBusk, H. & **Carruth, D.** (2017). Lower extremity kinematics in military footwear during slip events. *Proceedings of the American Society of Biomechanics Annual Conference*, Boulder, CO.
3. Luginsland, L.A., Chander, H., Wade, C., Garner, J.C., Eason, J.D., Wilson, S.J., Gdovin, J.R., Hill, C.M., Knight, A.C., **Carruth, D.** (2017). Influence of Occupational Footwear on Muscle Activity during a Simulated Extended Time-Duration. *Proceedings of the American Society of Biomechanics Annual Conference*, Boulder CO.

4. McCool, R. A., Usher, J., Strawderman, L., **Carruth, D. W.**, Bethel, C. L., & May, D. (May 2017). Simulating Group Formations That Arise in Pedestrian Traffic. IISE Annual Conference and Expo 2017, Pittsburgh, PA.
5. **Carruth, D.W.**, Garrison, T.M., King, M.D., Jinkerson, J.L., Irby, D., & Sween, R. (July 2016). Comparison of Effective Field of View for Vehicle Operators in a Virtual Metropolitan Environment. *7th International Conference on Applied Human Factors and Ergonomics 2016*, July 27-31, Orlando, FL.
6. Bethel, C. L., May, D., **Carruth, D.**, Strawderman, L., Holler, K., Louine, J., & Rogers, S. (2014). Using Robots in Criminal Justice Applications: Experiments in Policing, Gathering Sensitive Data from Bullying Victims, and Military Policing. *Annual Meetings of the Southern Criminal Justice Association*. Clearwater, FL.
7. Garrison, T. M., & **Carruth, D.** (2014). Extending Naturalistic Driving Research to the Patrol Car: A Pilot Project. *Fourth International Symposium on Naturalistic Driving Research*. Blacksburg, VA.
8. King, K., **Carruth, D.**, Strawderman, L., Garrison, T. M., & Campbell, S. (2014). Improving Safety of Vulnerable Road Users. *2014 Industrial and Systems Engineering Research Conference*. Montreal, Canada.
9. **Carruth, D.W.**, Strawderman, L., & Garrison, T. (2013). Improving safety of vulnerable road users: Effectiveness of environment and in-vehicle warning systems at a bus terminal. *Proceedings of the 1st National Center for Intermodal Transportation for Economic Competitiveness Annual Conference*, Starkville, MS.
10. Garrison, T., Brown, K., Holbrook, N., & **Carruth, D.W.** (2012). Impact of Dispatch Communication and Display Characteristics on Law Enforcement Patrol Situation Awareness. *Proceedings of the 15th Annual Applied Ergonomics Conference 2012*, Nashville, TN.
11. Strawderman, L., Young, G., Kimble, K., Nash, K., **Carruth, D.W.**, & Babski-Reeves, K. (2012). Exploring the Impact of UAV Interfaces on Pilot Workload, Situation Awareness, and Usability. *Proceedings of the 15th Annual Applied Ergonomics Conference 2012*, Nashville, TN.
12. Neal, E., McGinley, S., **Carruth, D.**, Knight, A., & Hale, B. (2011). Assessment of Football Player Knee Joint Motion During Vertical Step Down Movement. *Proceedings of the 2011 Annual Meeting of the Southeast Chapter of the American College of Sports Medicine*, Greenville, South Carolina.
13. Harkins, K., McGinley, S., **Carruth, D.**, Hale, B., & Knight, A. (2011). Assessment of Football Player Hip Joint Motion During Vertical Step Down Movement. *Proceedings of the 2011 Annual Meeting of the Southeast Chapter of the American College of Sports Medicine*, Greenville, South Carolina.

14. Collins, N., McGinley, S., **Carruth, D.**, Hale, B., & Knight, A. (2011). Assessment of Football Player Ankle Joint Motion During Vertical Step Down Movement. Proceedings of the *2011 Annual Meeting of the Southeast Chapter of the American College of Sports Medicine*, Greenville, South Carolina.
15. **Carruth, D.**, McGinley, J., Mikulski, C., & Shvartsman, A. (2010). Advancing the Behavior Modeling and Visualization of Entities in the Ground Vehicle Simulation Laboratory. Proceedings of *2010 NDIA Ground Vehicle Systems Engineering and Technology Symposium*, Dearborn, MI.
16. Garrison, T., Thomas, M.D., & **Carruth, D.** (Aug 2009). Understanding soldier tasks for effective simulation. In *Proceedings of the First Annual Ground Vehicle Systems Engineering and Technology Symposium (GVSETS)*, Troy, MI.
17. Robbins, B., **Carruth, D. W.**, & Morais, A. (2009). Bridging the Gap between HCI and DHM: The Modeling of Spatial Awareness within a Cognitive Architecture. In *Proceedings of HCI International*, San Diego, CA.
18. Parker, L., McGinley, S., **Carruth, D.W.**, & McGinley, J. (Mar 2009). Human Performance in Simulated Tasks Using Game Controllers. *Proceedings of Applied Ergonomics*, Reno, Nevada.
19. Blackledge, C., Patnaik, S.S, & **Carruth, D.W.** (Jul 2008). Spatial training research in virtual environments. *Proceedings of Applied Human Factors & Ergonomics International*, Las Vegas, NV. (poster)
20. Thomas, M., McGinley, J., **Carruth, D.W.**, & Blackledge, C. (Jun 2007). Cross-Validation of an Infrared Motion Capture System and an Electromechanical Motion Capture Device. *Proceedings of the Society of Automotive Engineers Digital 2007 Human Modeling Conference*, Seattle, WA.
21. **Carruth, D.W.**, & Littell, N. (May 2007). Leveraging CATIA V5 and Vrttools for Environment Simulation . *COE 2007 Annual PLM Conference & TechniFair*, Las Vegas, NV.
22. **Carruth, D. W.**, Robbins, B., Thomas, M.D., Morais, A., Letherwood, M., & Nebel, K. (2006). Symbolic Model of Perception in Dynamic 3D Environments. In *Proceedings of the 25th Army Science Conference*, Orlando, FL. (poster)
23. Thomas, M.D., **Carruth, D. W.**, McGinley, J., Follett, F. (2006). Task Irrelevant Scene Perception and Memory During Human Bipedal Navigation in a Genuine Environment. In *Proceedings of the 25th Army Science Conference*, Orlando, FL. (poster)
24. Brou, R.J., **Carruth, D.W.**, Doane, S.M., Vickery, R., & Moorhead, R. J., II. (Sep 2002). Effects of Disorientation on Human Spatial Cognition: Object Localization in Virtual

Environments. *46th Annual Meeting of the Human Factors Society*, Baltimore, MD, 2184-2188. (poster)

Abstracts

1. Bethel, C. L., & Carruth, D. W. (Mar 2017). Privacy Expectations and Concerns Related to the Use of Robots in Law Enforcement. *Privacy-Sensitive Robotics Workshop at the 12th ACM/IEEE International Conference on Human-Robot Interaction*, Vienna, Austria.
2. Patnaik, S., Babski-Reeves, K., Ahmed, S., Littlejohn, R., & Carruth, D. (May 2009). Comparison of Postural Analysis Techniques: Application of Ergonomic Tools with a Law Enforcement Perspective. *Proceedings of the Annual Institute of Industrial Engineering Research Conference*, Miami, Florida.

Book Chapter

1. Carruth, D. W., & Duffy, V. G. (2008). Integrating Cognitive and Digital Human Models for Virtual Product Design. In Chebykin, Bedny, and Karwowski (Eds.), *Ergonomics and Psychology: Developments in Theory and Practice* Taylor and Francis, 29-40.

Professional Presentations

1. Carruth, D.W. (2018). Moderator for Panel Discussion on the Purpose of Autonomous Driving. *3rd Roundtable on the Purpose of Autonomous Driving (ROAD 2018)*, Starkville, MS.
2. Carruth, D.W. (2017). Applications of computational simulation for analysis of autonomous systems. *2nd International Symposium on Advanced Vehicle Technology (ISAVT 2017)*, Starkville, MS.
3. Carruth, D.W. (2016). Extending Analysis of Field of View: Can the Operator See Critical Visual Information? *RAMSIS Update Conference 2016*, Troy, MI.
4. Garrison, T., Williams, C., Carruth, D.W., Brown, K. (2012). Impact of Dispatch Communication and Display Characteristics on Law Enforcement Patrol Situation Awareness. *Officer Safety and Wellness Meeting*, Washington, DC: Office of Justice Programs: Bureau of Justice Assistance and Community Oriented Policing Services.
5. Carruth, D.W., & Babski-Reeves, K. (2011). Law Enforcement Officer Body Armor Research Program: Assessing Impact of Current and Next Generation Armor Designs on Law Enforcement Officers. *NIJ Conference 2011*, Arlington, VA.
6. Carruth, D.W. (2011). Law Enforcement Body Armor Ergonomics. *NIJ/NIST Body Armor Technical Working Group*, Baltimore, MD.

7. **Carruth, D.W.** (2010). Law Enforcement Human Factors: Ergonomics, Simulation and Training. *Mississippi Higher Education Leadership Preparedness Conference*, Itta Bena, MS.
8. Lofton, J., Tuggle, T., Hamell, S., Loftin, C., & **Carruth, D.W.** (Mar 2009). Mississippi Active Shooter Training Program. *Southern States Homeland Security Conference*, Biloxi, MS.
9. **Carruth, D.W.** (Jun 2007). Law Enforcement Research Initiative. *Mississippi Association of Chiefs of Police Summer Conference*, Biloxi, MS.

Service and Committees

- Member – Virtual Reality/Augmented Reality Association (VRARA), Training Committee, Criminal Justice Committee
- Member – Society of Automotive Engineers (SAE)
- Member – Scientific Advisory and Program Board for 4th International Conference on Digital Human Modeling (July 2013)
- Reviewer – International Journal of Human Factors Modeling and Simulation (IJHFMS), Applied Ergonomics
- General Committee Member - Society of Automotive Engineers 2007 Digital Human Modeling for Design and Engineering Conference and Expo

- Committee Member - ISE MS Thesis (David Close, 2010)
- Committee Member - ISE MS Thesis (Chris Blackledge, 2011)
- Committee Member – ISE MS Thesis (Katherine King, 2014)
- Committee Member – ISE MS Thesis (Angela Brooke Cannon, 2014)
- Advisor – ISE MS Thesis (Leif Jensen)
- Committee Member – ISE PhD Dissertation (Steve McElhaney, 2013)
- Committee Member – ISE PhD Dissertation (Reuben Burch, 2014)
- Committee Member – ISE PhD Dissertation (Mahmud Rahman, 2016)
- Committee Member – ISE PhD Dissertation (Shuchisnigda Deb, 2017)
- Co-Advisor – CSE PhD Dissertation (Christopher Hudson)
- Committee Member – CSE PhD Dissertation (Phillip J. Durst)