



Dar-Wei Chen, Ph.D.

Human factors, research design, learning science

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Areas of expertise

Human factors || User experience | Interfaces | Attention, situation awareness | Human error | Wireframing (incl. Figma) | Journey maps | Workload | Accessibility, universal design | Sensation, perception | Decision theory and bias | Process modeling | Human-computer interaction

Research design || Experimental methodologies | Qualitative measures | Survey design | Tech writing | Data visualization | Stats (SPSS) | User interviews | Scholarly literature review | Participant recruiting | Stakeholder relationships

Learning science || Constructivist learning | Learning transfer | Individual differences | Instructional design | Training methods | Educational psychology | Learning assessment

Selected awards

- 4x major internal awards at MITRE
- Twenty peer-reviewed scholarly publications
- Finalist (team), I/ITSEC Serious Games (2019)
- Finalist (team), ASHP Excellence in Medication Safety (2017)
- Foley Scholar for top PhD students at GT (2017)
- Graduate Student Instructor of the Year (2016-2017)
- Best student paper, HFES Education group (2015)
- Georgia Tech Presidential Fellowship (2012)

Languages

- **English:** Native language
- **Chinese:** Spoken fluency
- **Spanish:** Intermediate spoken and reading fluency

Other

-  Volunteer assistant basketball coach for Fayetteville Public Schools (2021-present)
-  Volunteer consultant for Orlando Magic on player development (2019-2020 season)
-  Clarinetist in Michigan Marching Band for 2008-2009 football season

Work experience



Sr. human factors engineer, task lead

The MITRE Corporation

2019-2025

- **IRS taxpayer services:** Led small teams in improving the taxpayer experience and accessibility (e.g., low English proficiency, visual disability, rural areas) of various IRS services (e.g., Secure Messaging, Tax Withholding Estimator, Free File) through usability evaluations, taxpayer interviews, website user metrics, journey maps, recommended AI implementations, and other methods
- **COVID-19 vaccine distribution:** Contributed to a process map (entities, actions, performance standards) that helped the White House develop its plan to vaccinate at least 100 million Americans within 100 days
- **Navy Advanced Weapons Elevator (AWE):** Mentored and led a small team of engineers to recommend implementations of AI and re-designs to increase user SA, prioritize and fix issues, and transport cargo efficiently (MIL STD 1472, 2525)
- **Targeting processes (Fires Support Next, ASTARTE):** Created models of military targeting processes to help design AI-powered technologies that improve soldiers' decision-making without increasing cognitive workload
- **UAS Traffic Management (UTM):** Helped the FAA visualize the necessary steps to performing remote identification of drones by creating a model that outlines common UAS types, common UAS actions, and regulations (and their effects)
- Presented to and maintained relationships with government sponsors such as: IRS Online Services, Dept. of Defense, FAA (aviation), HHS (health)



Research scientist

Soar Technology

2018-2019

- **Lifelong learning portal (ADL initiative):** Designed user experience and led functional requirements documentation for an online tool that military personnel can use to track their work, learning, and personal activities
- **Complex cognitive skills (Army Research Institute):** Created a framework that outlines current CCS research and provides a road map for future CCS research
- **Fishing video game (NAWCTSD):** Designed experimental plan and user experience to help game players learn to be P-8 anti-sub warfare instructors
- **Social information processing (SIP):** Identified behavioral indications that can improve the accuracy of virtually assessing the SIP skills of children

Education



Ph.D., Human factors psychology

Georgia Tech

2012-2018

- **Minor concentration:** Human-computer interaction
- **CDC immunization schedule redesign:** Led a team of GT PhD students in a usability-driven redesign of the CDC's immunization schedule pamphlet
- **Dissertation:** Compared the effectiveness of "productive failure" learning methods to traditional "direct instruction" methods in various domains
- **"Voting System of Tomorrow" competition:** Co-led a team of GT PhD students to a team first-place prize in a 2014 HFES voting process redesign contest
- **Usability of work tools:** Contributed to an *Ergonomics in Design* article that recommended work tools (e.g., Cisco, Trello) based on usability heuristics
- **Georgia Tech HFES:** Served as HFES-GT president in 2015-2016



B.S.E., Industrial engineering

University of Michigan (Ann Arbor)

2008-2012

- **Medication tray redesign:** Implemented principles of human factors and lean engineering in a redesign of crash cart medication trays at the Ann Arbor Veterans Affairs Hospital, increasing drug retrieval speed and accuracy

Academic publications



Refereed journal articles

Chen, D., Chase, V., Burkhardt, M., & Agulto, A. (2016). Using industrial engineering and human factors design principles to improve accuracy and speed of drug selection. *Joint Commission Journal of Quality and Patient Safety*, 42 (10), 473-477.

Gable, T.M., **Chen, D.**, Darling, C.M., McGlynn, S., Kazi, S., Preusse, K., Yoo, A., & Schaeffer, L.M. (2016). Recommendations for improving the American voting process through the application of human factors principles. *Ergonomics in Design: The Quarterly of Human Factors Applications*, 24 (3), 4-8.

Goldberg, B., Amburn, C., Ragusa, C., & **Chen, D.** (2017). Modeling Expert Behavior in Support of an Adaptive Psychomotor Training Environment: A Marksmanship Use Case. *International Journal of Artificial Intelligence in Education*, 28 (2), 194-224.

Margulieux, L.E., **Chen, D.**, McDonald, J.D., Bujak, K.R., Gable, T.M., Darling, C.M., Schaeffer, L.M., & Barg-Walkow, L.H. (2016). Online Collaboration Applications Evaluated by Ease of Use. *Ergonomics in Design: The Quarterly of Human Factors Applications*, 24 (2), 21-30.

Refereed conference proceedings

Amburn, C.R., Goldberg, B.S., **Chen, D.**, Ragusa, C., Boyce, M.W., & Shorter, P. (2016). Effects of equipment on model development for adaptive marksmanship trainers. Paper presented at the *Interservice/Industry Training, Simulation, and Education Conference* (I/ITSEC) 2016, Orlando, FL.

Chen, D. & Catrambone, R. (2019). Productive failure and subgoal scaffolding in novel domains. *Proceedings of the 21st International Conference on Human-Computer Interaction*.

Chen, D. & Catrambone, R. (2016). Facilitating spatial task learning in interactive multimedia environments while accounting for individual differences and task difficulty. *Proceedings of the 38th Annual Meeting of the Cognitive Science Society* (pp. 1925-1930). Austin, TX: Cognitive Science Society.

Chen, D. & Catrambone, R. (2015). Paper vs. Screen: Effects on Reading Comprehension, Metacognition, and Reader Behavior. *Proceedings of the 59th Annual Meeting of the Human Factors and Ergonomics Society* (pp. 332-336). Santa Monica, CA: Human Factors and Ergonomics Society. [Best Student Paper, Education Technical Group – HFES 2015]

Chen, D. & Catrambone, R. (2014). Effects of multimedia interactivity on spatial task learning outcomes. *Proceedings of the 58th Annual Meeting of the Human Factors and Ergonomics Society* (pp. 1356-1360). Santa Monica, CA: Human Factors and Ergonomics Society.

Chen, D. & Doescher, C. (2023). Trust issues: Measuring warfighter trust in an airspace deconfliction engine. *Proceedings of the 91st Military Operations Research Society (MORS) Symposium*. Arlington, VA: Military Operations Research Society.

Chen, D., Neville, K.J., Massey, L., Burbelo, G.A., Blankenbeckler, P.N., Normand, S., & Uhl, E. (2019). Toward a definition of complex cognitive skill. *Proceedings of the 63rd Annual Meeting of the Human Factors and Ergonomics Society*.

Chen, D., Schaeffer, L.M., Preusse, K., Gable, T.M., Hartzell, C., McGlynn, S., Yoo, A., Gipson, C., & Kim, D. (2018). Improving the U.S. Adult Immunization Schedule by Applying Usability Principles. *Proceedings of the 62nd Annual Meeting of the Human Factors and Ergonomics Society*. Santa Monica, CA: Human Factors and Ergonomics Society.

Cochran, Z., Tomlinson, B., **Chen, D.**, & Patel, K. (2014). LightWeight: Wearable Resistance Rehab Visualization. *Proceedings of the 27th Annual ACM Symposium on User Interface Software and Technology* (pp. 101-102). New York, NY: Association for Computing Machinery.

Folsom-Kovarik, J.T. & **Chen, D.** (2018). Data Analytics Can Make Existing Web-Delivered Assessments More Informative [Abstract]. *Proceedings of the 59th Annual Meeting of the Psychonomic Society* (p. 64). Madison, WI: Psychonomic Society.

Folsom-Kovarik, J.T., **Chen, D.**, Mostafavi, B., & Brawner, K. (2019). Measuring the complexity of learning content to enable automated comparison, recommendation, and generation. *Proceedings of the 21st International Conference on Human-Computer Interaction*.

Neville, K.J., **Chen, D.**, Massey, L., Cowell, T.S., Burbelo, G.A., Blankenbeckler, P.N., Normand, S., & Uhl, E. (2019, in press). A complex cognitive skills framework. *Proceedings of the 14th International Conference of Naturalistic Decision Making*.

Sollins, B., **Chen, D.**, Reinerman-Jones, L.E., & Tarr, R. (2014). Truck Driving Distractions: Impact on Performance and Physiological Response. *Proceedings of the 58th Annual Meeting of the Human Factors and Ergonomics Society* (pp. 2171-2175). Santa Monica, CA: Human Factors and Ergonomics Society.

Book chapters

Folsom-Kovarik, J.T., **Chen, D.**, Mostafavi, B., & Freed, M. (2019). *Personalization*. In J.J. Vogel-Walcutt (Ed.), *Advanced Distributed Learning*.

Schaeffer, L.M., Margulieux, L.E., **Chen, D.**, & Catrambone, R. (2016). Feedback via Educational Technology. In L. Lin & R. Atkinson (Eds.), *Educational Technologies: Challenges, Applications, and Learning Outcomes*