Bruce A. Draper

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Professional Experience

- 2023-present: Department Chair, Department of Computer Science, Colorado State University.
- 2019-2023: Program Manager, Defense Advanced Research Projects Agency (DARPA), Information Innovation Office (I2O).
- 2010-2019: Professor, Department of Computer Science, Colorado State University.
- 2001-2010: Associate Professor, Department of Computer Science, Colorado State University.
- 2006: Visiting Scholar, Department of Psychology, Harvard University.
- 1996-2001: Assistant Professor, Department of Computer Science, Colorado State University.
- 1993-1996: Senior Post-doctoral Research Scientist, University of Massachusetts (Amherst).

Education

- Ph.D., Computer and Information Science, University of Massachusetts (Amherst), 1993.
- M.S., Computer Science, University of Massachusetts (Amherst), 1987.
- B.S., Computer Science, Yale University, 1984.

Projects Managed at DARPA

(* - projects I created and managed; † - projects I inherited and managed)

- *Perceptually-enabled Task Guidance* (PTG*). Goal: Combine augmented reality and AI to upskill users. Target domains were battlefield medicine, aircraft repair, and helicopter co-piloting.
- *The Geometries of Learning* (GoL*). Goal: Advance high-dimensional manifold models of deep neural networks to better predict their behavior under novel conditions.
- *Guaranteeing AI Robustness against Deception* (GARD†). Goal: Develop and distribute novel techniques to defend AI systems against adversarial attacks.
- *Learning with Less Labeling* (LwLL†). Goal: Reduce the number of labeled training samples needed for training neural networks, concentrating on low-resource domains.
- *Communicating with Computers* (CwC†). Goal: Create new paradigms for multi-modal Human-AI interactions to improve the efficiency and creativity of human and machine teams.

Scientific Service Highlights and Awards

- Chair, Information Science and Technology (ISAT) committee, IDA (for DARPA I2O) 2024-2025.
- Vice Chair, ISAT committee, IDA (for DARPA I2O) 2023-2024.
- Meritorious Service Medal, DARPA, 2023.
- General Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 1999.
- Computer Vision Area Chair, International Conference on Machine Learning (ICML), 2000-2002.

Research Publications

I have over 150 peer-reviewed scientific publications (total citations: 14,478; h-index: 51). The following 20 papers have been cited 140 or more times each (Google Scholar 8/23/25).

1. DS Bolme, JR Beveridge, BA Draper, YM Lui. *Visual object tracking using adaptive correlation filters*. 2010 CVPR. 4,555 cites.
2. BA Draper, K. Baek, MS Bartlett, JR Beveridge. *Recognizing faces with PCA and ICA*. 2003 CVIU. 909 cites.
3. BA Draper, RT Collins, J. Brolio, AR Hanson, E. Riseman. *The schema system*. 1989 IJCV. 386 cites
4. WS Yambor, BA Draper, JR Beveridge. *Analyzing PCA-based face recognition algorithms: Eigenvector selection and distance measures*. 2002. Empirical evaluations methods in computer vision. 381 cites.
5. DS Bolme, JR Beveridge, M. Teixeira, BA Draper. *The CSU face identification systems: its purpose, features, and structure*. 2003 ICCVS. 313 cites.
6. DS Bolme, BA Draper, JR Beveridge. *Average of synthetic exact filters*. 2009 CVPR. 301 cites.
7. S. O'Hara, BA Draper. *Introduction to the bag of features paradigm for image classification and retrieval*. 2009 arXiv. 290 cites.
8. JR Beveridge, PJ Phillips, DS Bolme, BA Draper, GH Givens, YM Lui, MN Teli, H. Zhang, WT Scruggs, KW Bowyer, PJ Flynn, S. Cheng. *The challenge of face recognition from digital point-and-shoot cameras*. 2013 BTAS. 238 cites.
9. PJ Phillips, PJ Flynn, JR Beveridge, WT Scruggs, AJ O'Toole, DS Bolme, KW Bowyer, BA Draper, GH Givens, YM Lui, H Sahibzada, JA Scallan III, S Weimer. *Overview of the multiple biometrics grand challenge*. 2009 ICOB. 238 cites.
10. J. Bins, BA Draper. *Feature selection from huge feature sets*. 2001 CVPR. 235 cites.
11. PJ Phillips, JR Beveridge, BA Draper, GH Givens, et al. *An introduction to the good, the bad, & the ugly face recognition challenge problem*. 2011 FG. 221 cites.
12. BA Draper, JR Beveridge, APW Bohm, C Ross, M Chawathe. *Accelerated image processing on FPGAs*. 2003 TIP. 218 cites.
13. K. Baek, BA Draper, Jr Beveridge, K She. *PCA vs. ICA: a comparison on the FERET data set*. 2002 JCIS. 213 cites.
14. P Narayana, JR Beveridge, BA Draper. *Gesture recognition: focus on the hands*. 2018 CVPR. 182 cites.
15. JR Beveridge, K She, BA Draper, GH Givens. *A nonparametric statistical comparison of principal component and liner discriminant subspaces for face recognition*. 2001 CVPR. 178 cites.
16. WA Najjar, APW Bohm, BA Draper, J Hammes, R Rinker, JR Beveridge, M Chawathe, C Ross. *High-level language abstraction for reconfigurable computing*. 2003 Computer. 175 cites.
17. JR Beveridge, DS Bolme, BA Draper, M Teixeira. *The CSU face recognition evaluation system: its purpose, features, and structure*. 2005 MVA. 162 cites.
18. M. Marengoni, BA Draper, AR Hanson, E Riseman. *A system to place observers on a polyhedral terrain in polynomial time*. IVC 2000. 152 cites.
19. SD Buluswar, BA Draper. *Color machine vision for autonomous vehicles*. EAAI 1998. 152 cites.
20. D McNeely-White, JR Beveridge, BA Draper. *Inception and ResNet features are (almost) equivalent*. CSR 2020. 142 cites.