Name & Contact

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Education

Ph.D., Computer Science,
University of Massachusetts, May 1993
M.S., Computer Science,
University of Massachusetts, February 1987.
B.S., Applied Mechanics and Engineering Science,
University of California, San Diego, June 1980.

Dissertation

Title: *Local Search Algorithms for Geometric Object Recognition: Finding the Optimal Correspondence and Pose.*
Committee: Edward M. Riseman (Chairperson), Allen R. Hanson, Robert Moll, Don Geman

Academic Positions

Since 5/10: *Professor*. Computer Science Department, Colorado State University
Since 4/13: *Professor, Joint Appointment*. Electrical & Computer Engineering, Colorado State University
8/99 - 4/10: *Associate Professor*. Computer Science Department, Colorado State University
8/93 - 7/99: *Assistant Professor*. Computer Science Department, Colorado State University
8/92 - 8/93: *Research Assistant Professor*. Computer Science Department, Colorado State University

Other Positions

4/09 - 9/09: *Consultant.* OPX Biotechnologies, Inc.
1/98 - 1/99: *Consultant*. Visible Productions
8/92 - 8/97: *Consultant*. DARPA IUE (Image Understanding Environment)
9/84 - 8/92: *Research Assistant*. Computer Vision Laboratory, University of Massachusetts.

Honors, Awards and Competitions

2021, Best Student Paper Award, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*,

2020, Best Demo Award, *International Conference on Artificial Reality and Telexistence & Eurographics Symposium on Virtual Environments*,

2019, Member of CwC Team competing for the *IBM Watson AI XPrize*. Made it to Round 3 (32 out of 147 starting teams) before elimination; not selected for final 10 in Round 4,

2013, Best Poster Award, *IEEE* 6^{th} *Int. Conf. on Biometrics: Theory, Applications and Systems*,

2011, Outstanding Reviewer Award, 13^{th} *International Conference on Computer Vision*,

2009, Best Student Paper Award, *IEEE* 3^{rd} *Int. Conf. on Biometrics: Theory, Applications and Systems*,

2008, Best Paper Award, 8^{th} *IEEE Int. Conference on Automatic Face and Gesture Recognition*,

2008, Outstanding Reviewer Award, *IEEE Computer Vision and Pattern Recognition Conference*,

2007, Outstanding Reviewer Award, *IEEE Computer Vision and Pattern Recognition Conference*,

2006, Best Paper Award, Genetic Programming Track, *Genetic and Evolutionary Computation Conference*.

Publications

Books

1 Mark R. Stevens and J. Ross Beveridge, "Integrating Graphics and Vision for Object Recognition", Kluwer, 2001, ISBN 0-7923-7207-7

Refereed Journal Articles

1 Heting Wang , Vidya Gaddy, James Ross Beveridge and Francisco R. Ortega, "Building an Emotionally Responsive Avatar with DynamicFacial Expressions in HumanComputer Interactions". In Multimodal Technologies and Interaction, 2021, 5:3

2 R. F. Menger, M. Bontha, J. R. Beveridge, T. Borch and C. S. Henry, "Fluorescent Dye Paper-Based Method for Reliable Assessment of Pesticide Coverage on Leaves and Trees: A Citrus Grove Case Study", *Journal of Agricultural and Food Chemistry*. November 2020 (DOI 10.1021/acs.jafc.0c01835)

3 David McNeely-White, J. Ross Beveridge, Bruce A.Draper, "Inception and ResNet features are (almost) equivalent", *Cognitive Systems Research* , Volume 59, January 2020, Pages 312-318, ISSN 1389-0417.

4 Cody S. Carrell, Rachel M. Wydallis, Mridula Bontha, Katherine E. Boehle, J. Ross Beveridge, Brian J. Geiss and Charles S. Henry, "Rotary manifold for automating a paper-based Salmonella immunoassay", *RSC Advances*, The Royal Society of Chemistry, 2019.

5 Katherine E Boehle, Erin Doan, Sadie Henry, J. Ross Beveridge, Sangmi Pallickara, Charles S. Henry, "Single Board Computing System for Automated Colorimetric Analysis on Low-Cost Analytical Devices", *Analytical Methods*, The Royal Society of Chemistry, 2018.

6 Pradyumna Narayana, J. Ross Beveridge and Bruce A. Draper, "Interacting Hidden Markov Models for Video Understanding", *International Journal of Pattern Recognition and Artificial Intelligence*, Vol. 32, No. 11, 2018.

7 M. Wigness, B. Draper and R. Beveridge. "Efficient Label Collection for Image Datasets via Hierarchical Clustering", *International Journal of Computer Vision*, pp 59–85, Vol. 126, 2018.

8 Brett D. Hunter, Daniel Cooley, Geof H. Givens, and J. Ross Beveridge, "Modeling the upper tail of the distribution of facial recognition non-match scores", *Statistics and Its Interface*, pp. 711-725, Volume 10, Number 4, 2017,

9 Hao Zhang, J. Ross Beveridge, Bruce A. Draper and P. Jonathon Phillips, "On the Effectiveness of Soft Biometrics for Increasing Face Verification Rates", *Computer Vision and Image Understanding*, pp 50–62, Vol. 137, Issue C, August 2015. Reprinted in: Celebrating the Breadth of Biometrics Research 2015, Kevin Bowyer (ed).

10 Tim Marrinan, J. Ross Beveridge, Bruce Draper, Michael Kirby and Chris Peterson, "Flag Manifolds for the Characterization of Geometric Structure in Large Data Sets", *Numerical Mathematics and Advanced Applications - ENUMATH 2013, Lecture Notes in Computational Science and Engineering*, Springer, Volume 103, pp 457-465, October 2014.

11 Goef H. Givens, J. Ross Beveridge, Yui Man Lui, David S. Bolme, Bruce A. Draper, P. Jonathon Phillips, "Biometric Face Recognition: from Classical Statistics to Future Challenges", *Wiley Interdisciplinary Reviews: Computational Statistics*, Volume 5, Issue 4, Pages 288 – 308, July/August 2013.

12 G.H. Givens, J.R. Beveridge, P.J. Phillips, B. Draper, Y.M. Lui and D. Bolme, "Introduction to Face Recognition and Evaluation of Algorithm Performance", *Computational Statistics & Data Analysis*, Volume 67, Pages 236-247, November 2013.

13 J. Philliips, R. Beveridge, B. Draper, G. Givens, A. OToole, D. Bolme, J. Dunlop, Y.M. Lui, H. Sahibzada, S. Weimer. "The Good, the Bad, and the Ugly Face Challenge Problem", *Image and Vision Computing*, 30 (3), pp. 177 – 185, *Best of Automatic Face and Gesture Recognition 2011*.

14 J.Ross Beveridge, Geof H. Givens, P.Jonathon Phillips, Bruce A. Draper, David S. Bolme, and Yui Man Lui. "FRVT 2006: Quo Vadis Face Quality". *Image and Vision Computing*, May 2010, pp. 732-743.

15 Yui Man Lui, J. Ross Beveridge, and L Darrell Whitley, "Adaptive Appearance Model and Condensation Algorithm for Robust Face Tracking", *IEEE Transactions on Systems, Man, and Cybernetics–Part A: Systems and Humans*, vol. 40, no. 3, pp. 437-448, May 2010.

16 J. Ross Beveridge, Geof H. Givens, P. Jonathon Phillips, Bruce A Draper, "Factors that Influence Algorithm Performance in the Face Recognition Grand Challenge", *Computer Vision and Image Understanding*, Volume 113, Issue 6, June 2009, Pages 750-762.

17 J. Ross Beveridge, Bruce A. Draper, Jen-Mei Chang, Michael Kirby, Holger Kley, Chris Peterson, "Principal Angles Separate Subject Illumination Spaces in YDB and CMU-PIE", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 31, no. 2, pp. 351-363, February, 2009.

18 Adrian Clark, Neil A Thacker, John L Barron, J Ross Beveridge, Patrick Courtney, William R Crum, Visvanathan Ramesh and Christine Clark, "Performance Characterization in Computer Vision: A Guide to Best Practices", *Computer Vision and Image Understanding*, vol. 109:3, pp. 305–334, March 2008.

19 Jason A. Denton and J. Ross Beveridge, "An Algorithm for Projective Point Matching in the Presence of Spurious Points", *Pattern Recognition*, Vol. 40, pp 586 – 595, February 2007.

20 D. Bolme, R. Beveridge, M. Teixeira and B. Draper, "The CSU Face Identification Evaluation System: Its Purpose, Features and Structure", *Machine Vision and Applications*, Vol. 16, pp 128 – 138, February 2005, *(Expanded version of ICVS 2003 paper)*.

21 Bruce Draper, Ross Beveridge, Wim Bohm and Monica Chawathe, "Accelerated Image Processing on FPGAs", *IEEE Transactions on Image Procecssing*, Vol. 12, pp 1543 – 1551,December 2003.

22 B. Draper, K. Baek, M.S. Bartlett and R. Beveridge, "Recognizing Faces with PCA and ICA", *Computer Vision and Image Understanding*, Vol. 91, pp 115 – 137, July 2003.

23 W. Najjar, W. Bhm, B. Draper, J. Hammes, R. Rinker, R. Beveridge, M. Chawathe, and C. Ross. "From Algorithms to Hardware – A High-Level Language Abstraction for Reconfigurable Computing", *IEEE Computer*, Vol. 36, No. 8, pp. 63 – 69, August 2003.

24 J. Ross Beveridge, Charlie Ross, L. Darrell Whitley, Barry Fish, "Augmented geophysical data interpretation through automated velocity picking in semblance velocity images", *International Journal of Machine Vision and Applications*, 13:3, pp 141-148, 2002. (*expanded version of WACV 2000 workshop paper.*)

25 Bruce A. Draper and J. Ross Beveridge, "Teaching Image Computation: From Computer Graphics to Computer Vision" *International Journal of Pattern Recognition and Artificial Intelligence*, Vol. 15, No. 5, pp 823 – 831, 2001

26 Mark R. Stevens and J. Ross Beveridge, "Localized Scene Interpretation from 3D Models, Range, and Optical Data", *Image Understanding*, Vol. 80, No. 2, pp 111-129, November 2000.

27 J. Ross Beveridge, Karthik Balasubramaniam and Darrell Whitley, "Matching Horizon Features Using a Messy Genetic Algorithm", *Computer Methods in Applied Mechanics and Engineering*, Vol 186 (2000), pp 499 – 516.

28 Mark R. Stevens, J. Ross Beveridge and Michael E. Goss, "Visualizing Multisensor Model-Based Object Recognition", *Machine Graphics & Vision*, Vol 6, No. 3, 1997, pp 279 – 304 (shortened version appears in *"Reconnaissance, Surveillance, and Target Acquisition (RSTA) for the Unmanned Ground Vehicle: Provid-*

ing Surveillance "Eyes" for an Autonomous Ground Vehicle", Oscar Firschein, Editor. Publisher, Morgan Kaufmann.)

29 J. Ross Beveridge and Edward M. Riseman, "How Easy is Matching 2D Line Models Using Local Search?", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, by Vol 19, No. 6, pp 564 – 579, June 1997.

30 J. Ross Beveridge and Mark R. Stevens, "Precise Matching of 3-D Target Models to Multisensor Data", *IEEE Transactions on Image Processing*, Vol. 6, No. 1, pp 126 – 142, January 1997.

31 D. Whitley, J. Ross Beveridge, C. Graves and K. Mathias, "Test Driving Three 1995 Genetic Algorithms: New Test Functions and Geometric Matching, *Journal of Heuristics*, Vol. 1, No. 1, pp 77 – 104, Fall 1995, Kluwer Academic Publishers.

32 Bruce A. Draper, J.Ross. Beveridge, "Response to "Performance Characterization in Computer Vision" ", CVGIP: Image Understanding, Volume 60, Issue 2, September 1994, pp 262-263, Elsevier.

33 J. Ross Beveridge and Edward M. Riseman, "Optimal Geometric Model Matching Under Full 3D Perspective", *Computer Vision and Image Understanding*, Vol. 61, No. 3, May, pp 351-364, 1995 (short version appeared in *Second CAD-Based Vision Workshop*, pp 54 – 63. IEEE Computer Society Press, February 1994).

34 Claude Fennema, Allen R. Hanson, Edward M. Riseman, J. Ross Beveridge, and Rakesh Kumar, "Model-Directed Mobile Robot Navigation", *IEEE Transactions in Systems, Man and Cybernetics*, Vol. 20, No. 6, pp 1352–1369, 1990.

35 J. Ross Beveridge, Joey Griffith, Ralf R. Kohler, Allen R. Hanson, and Edward M. Riseman. "Segmenting Images Using Localized Histograms and Region Merging", *International Journal of Computer Vision*, Vol. 2, No. 3, pp. 311–347, 1989.

36 John Brolio, Bruce A. Draper, J. Ross Beveridge, and Allen R. Hanson, "ISR: A Database for Symbolic Processing in Computer Vision", *IEEE Computer*, Vol. 22, No. 12, pp 22–30, 1989.

Book Chapters

1 P. Jonathon Phillips, Patrick J. Flynn, J. Ross Beveridge, W. Todd Scruggs, Alice J. OToole, David Bolme, Kevin W. Bowyer, Bruce A. Draper, Geof H. Givens, Yui Man Lui, Hassan Sahibzada, Joseph A. Scallan III and Samuel Weimer, "Overview of the Multiple Biometrics Grand Challenge", in *Advances in Biometrics, Lecture Notes in Computer Science*, Springer Berlin / Heidelberg, June 2009.

2 J. Ross Beveridge, Bruce A. Draper, Geof H. Givens and Ward Fisher, "Introduction to the Statistical Evaluation of Face Recognition Algorithms", in *Face Processing: Advanced Modeling and Methods*, Wenyi Zhao and Rama Chellappa, Elsevier, 2006.

3 W. Yambor, B. Draper and R. Beveridge, "Analyzing PCA-based Face Recognition Algorithms: Eigenvector Selection and Distance Measures", in *Empirical Evaluation Methods in Computer Vision*, H. Christensen and J. Phillips (eds.), World Scientific Press, Singapore, 2002.

4 J. Ross Beveridge, Bruce A. Draper, Mark R. Stevens, Allen Hanson and Kris Siejko, "A Coregistration Approach to Multisensor Target Recognition with Extensions to Exploit Digital Elevation Map Data", In *"Reconnaissance, Surveillance, and Target Acquisition (RSTA) for the Unmanned Ground Vehicle: Providing Surveillance "Eyes" for an Autonomous Ground Vehicle"*, Oscar Firschein, Editor. Publisher, Morgan Kaufmann. 1997

5 Edward M. Riseman, Allen R. Hanson, J. Ross Beveridge, Rakesh Kumar and Harpreet Sawhney, "Landmark-Based Navigation and the Acquisition of Environmental Models", in "Visual Navigation: From Biological Systems to Unmanned Ground Vehicles", Yiannis Aloimonos Editor, pp 317–374, Lawrence Erlbaum As-

sociates, Inc., 1997

6 J. Ross Beveridge, Rich Weiss, and Edward M. Riseman, "Optimization of 2-Dimensional Model Matching", in *Selected Papers on Automatic Object Recognition*. Hatem Hasr, Editor. SPIE Milestone Series, 1991. Reprinted from *Proceedings: DARPA Image Understanding Workshop*, June 1989.

Conferences

1 Isaac Wang, Pradyumna Narayana, Dhruva Patil, Rahul Bangar, Bruce Draper, Ross Beveridge and Jaime Ruiz. "Its a Joint Effort: Understanding Speech and Gesture in Collaborative Tasks", *23rd International Conference on Human-Computer Interaction (HCC2021)*, July 2021.

2 Ameni Trabelsi, Mohamed Chaabane, Nathaniel Blanchard, Ross Beveridge, "A Pose Proposal and Refinement Network for Better 6D Object Pose Estimation", *2021 IEEE Winter Conference of Applications on Computer Vision (WACV 2021)*, January 2021. (*Best Student Paper Award*).

3 Mohamed Chaabane, Lionel Gueguen, Ameni Trabelsi, Ross Beveridge and Stephen O'hara, "End-To-End Learning Improves Static Object Geo-localization In Monocular Video", *2021 IEEE Winter Conference of Applications on Computer Vision (WACV 2021)*, January 2021.

4 Nikhil Krishnaswamy, Ross Beveridge, James Pustejovsky, Dhruva Patil, David G. McNeely-White, Heting Wang and Francisco R. Ortega, "Situational Awareness in Human Computer Interaction: Dianas World", *International Conference on Artificial Reality and Telexistence & Eurographics Symposium on Virtual Environments*, December 4 2020. (Short paper and live demonstration). (*Best Demo Award*)

5 Nikhil Krishnaswamy, Pradyumna Narayana, Rahul Bangar, Kyeongmin Rim, Dhruva Patil, David McNeely-White, Jaime Ruiz, Bruce Draper, Ross Beveridge and James Pustejovsky, "Diana's World: A Situated Multimodal Interactive Agent", *Proceedings of the AAAI Conference on Artificial Intelligence* , April 3, 2020, Vol 34, Issue 9.

6 Albert Lionelle, Josette Grinslad and J. Ross Beveridge, "CS 0: Culture and Coding", *SIGCSE Technical Symposium 2020*, March 11 - 14, Portland, Oregon.

7 Mohamed Chaabane, Ameni Trabelsi, Nathaniel Blanchard and Ross Beveridge, "Looking Ahead: Anticipating Pedestrians Crossing with Future Frames Prediction", *IEEE Winter Conference on Applications of Computer Vision (WACV 2020)*, March 2-5, 2020, Snowmass, Colorado.

8 David G. McNeely-White, Francisco R. Ortega, J. Ross Beveridge, Bruce A. Draper, Rahul Bangar, Dhruva Patil, James Pustejovsky, Nikhil Krishnaswamy, Kyeongmin Rim, Jaime Ruiz, Isaac Wang, "User-Aware Shared Perception for Embodied Agents", *First IEEE International conference on Humanized Computing and Communication (HCC 2019)*, September 25 - 27, 2019, Laguna Hills CA

9 David G. McNeely-White, J. Ross Beveridge, Bruce A. Draper, "Inception and ResNet: Same Training, Same Features". In: Samsonovich A. (eds) *Biologically Inspired Cognitive Architectures 2019. BICA 2019. Advances in Intelligent Systems and Computing*, vol 948. Springer, Cham

10 Dhruva Patil, Bruce A Draper, J Ross Beveridge, "Looking Under the Hood: Visualizing What LSTMs Learn", *IEEE International Conference on Image Analysis and Recognition*, Waterloo, Canada, Aug. 27-29, 2019.

11 Pradyumna Narayana, R. Beveridge and B. Draper. "Analyzing multi-channel networks for gesture recognition", *International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, July 14-18, 2019.

12 Pradyumna Narayana, R. Beveridge and B. Draper. "Continuous Gesture Recognition through Selective Temporal Fusion", *International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, July 14-18, 2019.

13 G. Mulay, B. Draper and R. Beveridge. "Adapting RGB Pose Estimation to New Domains". *9th IEEE Computing and Communication Workshop and Conference*, Las Vegas, Jan 7-9, 2019

14 Pradyumna Narayana, N. Krishnaswamy, I. Wang, R. Bangar, D. Patil, G. Mulay, K. Rim, R. Beveridge, J. Ruiz and B. Draper, "Cooperating with Avatars Through Gesture, Language and Action", *IEEE Intelligent Systems Conference (IntelliSys)*, London, September 6-7, 2018, pp. 156-165.

15 Pradyumna Narayana, R. Beveridge and B. Draper, "Gesture Recognition: Focus on the Hands", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, June 19-21, 2018.

16 I. Wang, Pradyumna Narayana, J. Smith, B. Draper, R. Beveridge and J. Ruiz, "EASEL: Easy Automatic Segmentation Event Labeler" *ACM Conference on Intelligent User Interfaces*, Tokyo, March 7-12, 2018.

17 N. Krishnaswamy, Pradyumna Narayana, I. Wang, K. Rim, R. Bangar, D. Patil, G. Mulay, R. Beveridge, B. Draper and J. Pustejovsky. "Communicating and Acting: Understanding Gesture in Simulation Semantics", *12th International Conference on Computational Semantics*, Montpellier, France, Sept. 19 – 22, 2017.

18 P Jonathon Phillips, Amy N Yates, J Ross Beveridge, Geof Givens, "Predicting Face Recognition Performance in Unconstrained Environments", *2017 IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, pp 557 – 565, Honolulu, Hawaii, July 21, 2017

19 I. Wang, M. Ben-Fraj, Pradyumna Narayana, D. Patil, G. Mulay, R. Bangar, B. Draper, R. Beveridge and J. Ruiz. "EGGNOG: A continuous multi-modal data set of naturally occurring gestures with ground truth data", *IEEE Conference on Automatic Face and Gesture Recognition*, Washington DC, May 31 – June 2, 2017.

20 I. Wang, Pradyumna Narayana, D. Patil, G. Mulay, R. Bangar, B. Draper, R. Beveridge and J. Ruiz. "Exploring the Use of Gesture in Collaborative Tasks", *ACM CHI Extended Abstracts*, Denver, CO, May 6 – 100, 2017.

21 Tim Marrinan, Ross Beveridge, Bruce Draper, Michael. Kirby and Chris Peterson.Ł"Flag-based detection of weak gas signatures in long-wave infrared hyperspectral image sequences", *ŁSPIE9840, Algorithms and Technologues for Multispectral, Hyperspectral, and Ultraspectral Imagery XXII*, Baltimore, MD, April 17, 2016.

22 Ross Beveridge, Hao Zhang, Bruce Draper, Patrick Flynn, Zhenhua Feng, Patrik Huber, Josef Kittler, Zhiwu Huang, Shaoxin Li, Yan Li, Meina Kan, Ruiping Wang, Shiguang Shan, Xilin Chen, Haoxiang Li, Gang Hua, Vitomir Struc, Janez Krizaj, Changxing Ding, Dacheng Tao and Jonathon Phillips, "Report on the FG 2015 Video Person Recognition Evaluation", *The Eleventh IEEE International Conference on Automatic Face and Gesture Recognition (FG 2015)*, IEEE DOI: 10.1109/FG.2015.7163156, Ljublijana, Slovenia, May 2015.

23 Maggie Wigness, Bruce A. Draper, J. Ross Beveridge, "Efficient label collection for unlabeled image datasets", *2015 IEEE Computer Vision and Pattern Recognition*, p.4594–4602,
DOI: 10.1109/CVPR.2015.7299090, June 2015

24 Hao Zhang, J. Ross Beveridge, Quanyi Mo, Bruce A. Draper, and P. Jonathon Phillips, "Randomized Intraclass-Distance Minimizing Binary Codes for face recognition", *2014 IEEE International Joint Conference on Biometrics (IJCB)*, DOI: 10.1109/BTAS.2014.6996258, September 2014.

25 Yooyoung Lee, P. Jonathon Phillips, James J. Filliben, J. Ross Beveridge and Hao Zhang, "Generalizing Face Quality and Factor Measures to Video", *2014 IEEE International Joint Conference on Biometrics (IJCB)*, DOI: 10.1109/BTAS.2014.6996251, September 2014.

26 J. Ross Beveridge, Hao Zhang, Patrick J. Flynn, Yooyoung Lee, Venice Erin Liong, Jiwen Lu, Marcus de Assis Angeloni, Tiago de Freitas Pereira, Haoxiang Li, Gang Hua, Vitomir Struc, Janez Krizaj, P. Jonathon Phillips, "The IJCB 2014 PaSC Video Face and Person Recognition Competition", *2014 IEEE International*

Joint Conference on Biometrics (IJCB), DOI: 10.1109/BTAS.2014.6996256, September 2014.

27 Tim Marrinan, Bruce Draper, Ross Beveridge, Micheal Kirby and Chris Peterson, "Finding the Subspace Mean or Median to Fit Your Need", *2014 IEEE Conference on Computer Vision and Pattern Recognition*, DOI: 10.1109/CVPR.2014.142, Columbus, OH, USA, June 2014.

28 Maggie Wigness, Bruce A. Draper and J. Ross Beveridge, "Selectively Guiding Visual Concept Discovery", *IEEE Winter Conference on Applications of Computer Vision*, DOI: 10.1109/WACV.2014.6836093, Steamboat Springs, Colorado, March 2014.

29 Rahul Dutta, Bruce Draper and J. Ross Beveridge, "Video Alignment to a Common Reference", *IEEE Winter Conference on Applications of Computer Vision*, DOI: 10.1109/WACV.2014.6836020, Steamboat Springs, Colorado, March 2014.

30 J. Ross Beveridge, P. Jonathon Phillips, David Bolme, Bruce A. Draper, Geof H. Givens, Yui Man Lui, Mohammad Nayeem Teli, Hao Zhang, W. Todd Scruggs, Kevin W. Bowyer, Patrick J. Flynn and Su Cheng, "The Challenge of Face Recognition from Digital Point-and-Shoot Cameras", *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems*. October 2013 (A Best Poster Award).

31 P. Jonathon Phillips, J. Ross Beveridge, David Bolme, Bruce A. Draper, Geof H. Givens, Yui Man Lui, Su Cheng, Mohammad Nayeem Teli, Hao Zhang, "On the Existence of Face Quality Measures", *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems*. October 2013.

32 M.N. Teli, J. R. Beveridge, P, J. Phillips, G. H, Givens, B. A. Draper and D. S. Bolme. "Biometric Zoos: Theory and Experimental Evidence", *International Joint Conference on Biometrics*, Washington, D.C., Oct. 2011.

33 D. S. Bolme, J. R. Beveridge, B. A. Draper, P. J. Phillips and Yui Man Lui. "Automatically Searching for Optimal Parameter Settings Using a Genetic Algorithm", *International Conference on Vision Systems*, Sophia Antipolis, France, Sept. 2011, pp. 213-222.

34 Yui Man Lui and J. R. Beveridge. "Tangent Bundle for Human Action Recognition", *IEEE Conference on Automatic Face and Gesture Recognition*, Santa Barbara, CA, March 2011, pp. 97 – 102.

35 J. R. Beveridge, P. J. Phillips, G. H. Givens, B. A. Draper, M. N. Teli and D. S. Bolme, "When High-Quality Face Images Match Poorly, *IEEE Conference on Automatic Face and Gesture Recognition*, Santa Barbara, CA, March 2011, pp. 572 – 578.

36 P. J. Phillips, J. R. Beveridge, B. A. Draper, G. Givens, A. J. O'Toole, D. S. Bolme, J. Dunlop, Yui Man Lui and S. Weimer, "An Introduction to the Good, the Bad, and the Ugly Face Recognition Challenge Problem, *IEEE Conference on Automatic Face and Gesture Recognition*, Santa Barbara, CA, March 2011, pp 346 – 353.

37 Yui Man Lui, J. Ross Beveridge and Michael Kirby, "Action Classification on Product Manifolds", *The Twenty-Third IEEE Conference on Computer Vision and Pattern Recognition*, San Francisco, June 2010.

38 D. S. Bolme, J. R. Beveridge, B. A. Draper, and Y. M. Lui. "Visual Object Tracking using Adaptive Correlation Filters", *The Twenty-Third IEEE Conference on Computer Vision and Pattern Recognition*, San Francisco, June 2010.

39 David S. Bolme, J.Ross Beveridge, and Bruce A. Draper. "FaceL: Facile Face Labeling". *7th International Conference on Computer Vision Systems*, October 2009, Liege Belgium.

40 Yui Man Lui, David S. Bolme, Bruce A. Draper, J. Ross Beveridge and Geof H. Givens and J. Phillips. "A Meta-Analysis of Face Recognition Covariates", *IEEE International Conference on Biometrics: Theory, Applications and Systems*, September 2009, Washington DC.

41 Yui Man Lui, J. Ross Beveridge and Michael Kirby, "Canonical Stiefel Quotient and its Application to

Generic Face Recognition in Illumination Spaces", *IEEE International Conference on Biometrics: Theory, Applications and Systems*, September 2009, Washington DC. (*Best Student Paper Award*).

42 Mohammad Nayeem Teli and J. Ross Beveridge, "Pose Manifold Curvature is Typically Less Near Frontal Face Views", *IEEE International Conference on Biometrics: Theory, Applications and Systems*, September 2009, Washington DC.

43 P. Jonathon Phillips and J. Ross Beveridge, "An Introduction to Biometric-completeness: The Equivalence of Matching and Quality", *IEEE International Conference on Biometrics: Theory, Applications and Systems*, September 2009, Washington DC.

44 David Bolme, Bruce Draper, Ross Beveridge, "Average of Synthetic Exact Filters", *IEEE Computer Vision and Pattern Recognition*, June 2009.

45 Yui Man Lui, Ross Beveridge and Darrell Whitley, "A Novel Appearance Model and Adaptive Condensation Algorithm for Human Face Tracking", *IEEE Second International Conference on Biometrics: Theory, Applications and Systems*, September 29 – October 1, 2008, Washington DC.

46 Yui Man Lui and J. Ross Beveridge, "Grassmann Registration Manifolds for Face Recognition", *The 10th European Conference on Computer Vision*, October 12 – 18, 2008, Marseille, France.

47 J. Ross Beveridge, Geof H. Given, P. Jonathon Phillips, Bruce A. Draper and Yui Man Lui, "Focus on Quality, Predicting FRVT 2006 Performance", 2008 8th IEEE International Conference on Automatic Face and Gesture Recognition, Amsterdam, The Netherlands, Sept. 17 – 19 2008 (*Best Paper Award*).

48 Yui Man Lui, J. Ross Beveridge, Bruce A. Draper and Michael Kirby, "Image-Set Matching using a Geodesic Distance and Cohort Normalization", 2008 8th IEEE International Conference on Automatic Face and Gesture Recognition, Amsterdam, The Netherlands, Sept. 17 – 19 2008.

49 J.-M. Chang, M. Kirby, H. Kley, C. Peterson, B. Draper and J.R. Beveridge, "Recognition of digital images of the human face at ultra low resolution via illumination spaces", 8th Asian Conference on Computer Vision, Tokyo, Japan, Nov. 18-22 2007.

50 Yui Man Lui, Ross Beveridge, Adele Howe and Darrell Whitley, "Evolution Strategies for Matching Active Appearance Models to Human Faces", *IEEE Conference on Biometrics: Theory, Applications and Systems*, September 27–29, 2007, Washington DC, (*Honorable Mention for Best Student Paper*).

51 David Bolme, Ross Beveridge, and Adele Howe, "Person Identification using Text and Image Data", *IEEE Conference on Biometrics: Theory, Applications and Systems*, September 27–29, 2007, Washington DC.

52 Ross Beveridge, Patrick Flynn, Andres Alvarez, Jilmil Saraf, Ward Fisher, James Gentile, "Face Detection Algorithm and Feature Performance on FRGC 2.0 Imagery", *IEEE Conference on Biometrics: Theory, Applications and Systems*, September 27–29, 2007, Washington DC.

53 David Bolme, Michelle Mills Strout and Ross Beveridge, "FacePerf: Benchmarks for Face Recognition Algorithms", IEEE International Symposium on Workload Characterization (IISWC), September 2007.

54 Jen-Mei Chang, Michael Kirby, Holger Kley, Chris Peterson, J.Ros Beveridge and Bruce A. Draper, "Examples of Set-to-Set Image Classification", *Seventh International Conference on Mathematics in Signal Processing Conference Digest, The Royal Agricultural College, Cirencester, Institute for Mathematics and its Applications*, (abstract reviewed), pp. 102–105, December, 2006,

55 D. Whitley, Marc Richards, Ross Beveridge and Andre' Barreto, "Alternative Evolutionary Algorithms for Evolving Programs", *Genetic and Evolutionary Computation Conference*, July 2006, pp 919-926. ACM Press (*Best Paper Award, Genetic Programming Track*),

56 Jen-Mei Chang, J. Ross Beveridge, Bruce A. Draper, Michael Kirby, Holger Kley and Chris Peterson, "Illumination Face Spaces are Idiosyncratic", *2006 International Conference on Image Processing, Computer*

Vision, & Pattern Recognition, Vol 2., pp. 390–396, June 2006, CSREA Press,

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Workshops

1 Sonu Dileep, Daniel Zimmerle, Ross Beveridge and Timothy Vaughn, "Automated Identification of Oil

Field Features using CNNs", *NeurIPS 2020 Workshop Tackling Climate Change with Machine Learning, 2020 Conference on Neural Information Processing Systems*, December 2020

2 Ross Beveridge, Kevin Bowyer, John Garofolo, Jonathon Phillips, and Ranghachar Kasturi, "Data Sets and Performance Evaluation for Research in Large-Scale Video and Image Content Analysis", Chapter in *Frontiers in Image and Video Analysis NSF/FBI/DARPA Workshop Report* edited by Rama Chellappa, December 2014.

3 Y. M. Lui, D. Bolme, J. Phillips, R. Beveridge and B. Draper. "Preliminary Studies on the Good, the Bad, and the Ugly Face Recognition Challenge Problem", *IEEE CVPR Workshop on Biometrics*, pp. 9-16, June 2012

4 J. Ross Beveridge, David S. Bolme, Bruce A. Draper, Geof H. Givens, Yui Man Lui and P. Jonathon Phillips, "Quantifying How Lighting and Focus Affect Face Recognition Performance", *IEEE CVPR Workshop on Biometrics*, June 2010.

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6 Geof H. Givens, J. Ross Beveridge, Bruce A. Draper and P. Jonathon Phillips. "Repeated Measures GLMM Estimation of Subject-Related and False Positive Threshold Effects on Human Face Verification Performance", *Empirical Evaluation Methods in Computer Vision Workhsop* in Conjunction with CVPR 2005, June 2005

7 Geof H. Givens J. Ross Beveridge, Bruce A. Draper and David Bolme. "Using A Generalized Linear Mixed Model to Study the Configuration Space of a PCA+LDA Human Face Recognition Algorithm", *Articulated Motion and Deformable Objects, Third International Workshop (AMDO 2004)*, pp 1-11, September 2004.

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13 J. Ross Beveridge, "LiME: An Environment for 2D Line Segment Matching", *Workshop on Performance Characterisation and Benchmarking of Vision Systems*, pp 38 – 53, Las Palmas, Gran Canaria SPAIN, January 1999.

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15 Youbin Chen, Youshou Wu and J.Ross Beveridge, "Analysis and Improvement of Directional Element Feature for Off-line Handwritten Chinese Character Recognition",Y*Proceeding of the IS&T/SPIE's 10th Annual Symposium on Electronic Imaging: Science and Technology*, Vol. 3305, Jan.25-30, 1998, San Jose, California.

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Non Refereed Publications

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2 Ameni Trabelsi, Mohamed Chaabane, Nathaniel Blanchard and Ross Beveridge, "A Novel Pose Proposal Network and Refinement Pipeline for Better Object Pose Estimation", *arXiv preprint arXiv:2004.05507*, April 11, 2020

3 P. Jonathon Phillips, Amy N. Yates, Geof H. Givens and J. Ross Beveridge, "Its About the Face Impostor Distribution", NISTIR 8051, April 2015.

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8 J. Ross Beveridge, "LiME Users Guide", Colorado State University, Department of Computer Science Technical Report 97-122.

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10 J. Ross Beveridge and Chris Graves and Chris Lesher, "Some Lessons Learned from Coding the Burns Line Extraction Algorithm in the DARPA Image Understanding Environment", Colorado State University, Department of Computer Science Technical Report 96-125.

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Contracts and Grants - Principal Investigator

Communication through Gestures, Expression and Shared Perception, with Francisco Ortega and Jamie Ruiz, DARPA, 2015 – 2021 (Co-PI until 2019). $ 2,433,843

RAMFIS: Representations of vectors and Abstract Meanings for Information Synthesis, DARPA through University of Colorado, 2018 – 2022, $ 436,178

Advanced Statistical Biometric Analysis, including Video and Soft Biometrics with Bruce Draper and Geof Givens, Technical Support Working Group (TSWG), 2012 – 2014, $ 510,873

Face Recognition Evaluation and Baseline Algorithm Development, with Bruce Draper and Geof Givens, Army Research Office (IARPA), 2011–2012, $ 249,088

Face and Gesture 2011 Conference Doctoral Consortium,
National Science Foundation (NSF), 2011, $ 15,500

Advanced Statistical Analysis of Biometric Challenges and Evaluations with Bruce Draper and Geof Givens, Technical Support Working Group (TSWG), 2010 – 2012, $ 451,663

Enhanced Biometrics Fusion: Multiple Biometrics Grand Challenge
with Geof Givens and Bruce Draper, Technical Support Working Group (TSWG), 2008 – 2010, $ 433,587

Understanding Image-feature and Decision-procedure Choice for Human Face Detection
with Bruce Draper, National Science Foundation (NSF), 2005 – 2008, $ 160,000

Covariate Analysis of Face Recognition Algorithms
with Bruce Draper and Geof Givens, TSWG, 2004 – 2007 $ 388,070

Transfer EBGM to 3VR Security, Inc., with Bruce Draper, 3VR Security, Inc., 2007 $ 56,104

Statistical Inference Methods for Understanding Human Identification
with Bruce Draper and Geof Givens, DARPA, 2000 – 2003 $ 437,318

Using Terrain Knowledge in Multisensor RSTA DARPA, 1995 – 1998 $ 94,240

Image Understanding Environment Battelle, 1994 – 1997 $ 54,314

Integrated Color CCD and LADAR Based Object Modeling and Recognition
DARPA, 1993 – 1997 $ 718,510

Multiprocessor and Sensor Hardware for Vision, Learning, Planning and Parallel Processing
with Department, NSF Equipment Grant, 1995 $ 39,767

Contracts and Grants - Co-Principal Investigator

NSF AI Institute: Institute for Student-AI Teaming, PI is Sidney D'Mello at University of Colorado at Boulder, with CoPIs Martha S Palmer (Boulder), Tamara R Sumner (Boulder) and Sadhana Puntambekar (University of Wisconsin-Madison), NSF National Artificial Intelligence (AI) Research Institutes, 09/01/2020 – 08/31/2025, CSU Subcontract $ 623,644 (Full Institute $ 19,993,294)

Visual Intelligence through Latent Geometry and Selective Guidance, with Bruce Draper, Michael Kirby, and Chris Peterson, DARPA, 2010 – 2016, $ 1,192,007.

By the People, For the People: Connecting Hurricane Katrina Survivors Through Scholarship and Public Outreach with Katherine Browne and Lori Peek, Funded by the College of Liberal Arts Academic Enrichment Program at Colorado State University, 2006, $ 50,000

Computing Projections of High Dimensional Data using Algebro-Geometric Tools
with Charles Anderson, Bruce Draper, Michael Kirby, Holger Kley and Chris Peterson ,
NSF, 2004 – 2007, $ 499,991

Intelligent Agents for Severe Weather Tracking
with Darrell Whitley, Raytheon, 2005 – 2006 $ 100,000

A Three-dimensional in Vivo System for Visualizing Gene Expression
with June Medford and Bruce Draper, NSF, 2003 – 2005 $ 99,999

Cooperative Coevolution for Constructing Teams of Agents.
with Darrell Whitley, Raytheon, 2004 $49,999

Modeling the Ventral Visual Pathway: A Biomimetic Approach to Object Recognition
with Bruce Draper, National Imagery and Mapping Agency (NIMA), 2001-2003 $225,545

Optimized Compilation of Visual Programs for Image Processing on Adaptive Computing Systems
with Wim Bohm, Bruce Draper and Walid Najjar, DARPA/AFOSR, 1998 – 2001 $ 1,466,700

Comparisons and Applications of Local and Global Search
with Darrell Whitley, NSF, 1995 – 1998 $ 240,000

Automated Velocity Picking: A Computer Vision and Optimization Approach
with Darrel Whitley, Colorado Advanced Software Institute, 1997 – 1998 $ 34,485

Learning to Populate Geospatial Databases via Markov Decision Processes
with Bruce Draper, DARPA, 1997 – 1998 $ 171,875

Other Activities

Open Source Software

A visualization of RNNs in Skeleton based Action Recognition (SkeletonVis), Release August 2019. `https://www.cs.colostate.edu/~vision/skvis_toolset/index.php`. Over 10 downloads to date.

Generalized Curvature Analysis Toolkit (GeCAT), Released May 2018. `https://www.cs.colostate.edu/~vision/gecat_toolset/index.php`. Seven downloads to date.

Subspace Mean and Median Evaluation Toolkit (SuMMET), Released in June 2014. `https://www.cs.colostate.edu/~vision/summet/`. Over 100 downloads to date.

CS Roo PHP Course Templates, August 2012 with updates to January 2016. `http://www.cs.colostate.edu/~ross/csroo`. 19 CS Courses in 2014 and 15 in 2020.

CSU Point-and-Shoot Face Recognition Challenge (PaSC) Support Package. Released in June 2013. `http://www.cs.colostate.edu/~vision/pasc`. Over 450 downloads to date.

CSU Optimized Correlation Output Filters Toolset (OCOFTools). Released October 2012. Implementation of filter creation tools developed by David Bolme. Over 950 downloads to date.

2011 Baseline Face Recognition Algorithms, beta October 2011, full release January 2012 `http://www.cs.colostate.edu/facerec/algorithms/baselines2011.php`. Over 1000 downloads to date.

FaceL: Facile Face Labeling, Real-time face labeling over web camera video, C++ and Python, released May 2009. Over 900 downloads.
`http://www.cs.colostate.edu/facel/index09.php`

CSU Face Identification Evaluation System, Benchmark face recognition algorithms, C, 2003 – present. Over 25,000 downloads.
`http://www.cs.colostate.edu/evalfacerec/index.html`

LiME: Line Matching Environment, 2D line segment matching system, C++ and Java, 1997 – 2004.

Patents

US Patent 8,520,956. David S. Bolme, J. Ross Beveridge and Bruce A. Draper, *Optimized Correlation Filters for Signal Processing*, August 27, 2013.

US Patent 8,116,566. Michael Joseph Kirby, James Ross Beveridge, Jen-Mei Chang, Bruce Anthony Draper, Holger Philipp Kley, Christopher Scott Peterson, *Unknown Pattern Set Recognition* , February 14, 2012

Service

Editorial Boards

Guest Edtior, IEEE Transactions on Biometrics, Behavior, and Identity Science , 2019,
Guest Editor, Image and Vision Computing, Volume 58, 2017,
Editorial Board, Computer Vision and Image Understanding, 2010 - 2011,
Editorial Board, Image and Vision Computing, 2006 – 2009,
Editorial Board, IEEE Transactions on Pattern Analysis and Machine Intelligence, 1998 – 2002,
Editorial Board, Pattern Recognition, 1998 – 2002.

Conference and Workshop Organization

General Co-Chair 2019, 14^{th} IEEE Int. Conf. on Automatic Face and Gesture Recognition (FG),
General Co-Chair 2017 International Joint Conference on Biometrics (IJCB),
Evaluations Co-Chair 2017, 12^{th} IEEE Int. Conf. on Automatic Face and Gesture Recognition (FG),
Competition Co-Chair 2016, IEEE 8^{th} Int. Conf. on Biometrics Theory, Applications and Systems (BTAS),
Program Co-Chair 2015, IEEE 7^{th} Int. Conf. on Biometrics Theory, Applications and Systems (BTAS),
Program Co-Chair 2015, Workshop on Biometrics, IEEE CVPR 2015,
Area Chair 2015, 11^{th} IEEE Int. Conf. on Automatic Face and Gesture Recognition (FG),
Program Co-Chair 2014, Workshop on Biometrics, IEEE CVPR 2014,
Finance Co-Chair 2011, IEEE Int. Conf. on Automatic Face and Gesture Recognition,
Doctoral Consortium Co-Chair 2011, IEEE Int. Conf. on Automatic Face and Gesture Recognition ,
Co-Chair 2005, IEEE Workshop on Empirical Evaluation Methods in Computer Vision,
Organizer 2002, NIPS Workshop: Statistical Methods for Computational Experiments,
Program Co-Chair, 1999, IEEE Computer Vision and Pattern Recognition Conference,Vision,

Committees, Panels and Councils

Program Committee 2020, 11th International Workshop on Human Behavior Understanding (HBU 2020),
Program Committee 2019, 2011, 2010, 2009, 2008, 2007 IEEE Int. Conf. on Biometrics: Theory, Applications and Systems (BTAS),
Program Committee 2020, 2014 International Joint Conference on Biometrics (IJCB)
Program Committee 2016, 2017 International Workshop on Biometrics in the Wild,
Program Committee 2015, 2014, 2013 SPIE Biometric and Surveillance Technology for Human and Activity Identification,

Program Committee 2015, 2014, 2013, 2012 Int. Conf. on Pattern Recognition Applications and Methods (ICPRAM),

Program Committee 2013, The IAPR Int. Conf. on Biometrics,

Program Committee 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 1998, 1994 IEEE Computer Vision and Pattern Recognition Conference (CVPR),

Program Committee 2011, 2009, 2007 International Conference on Computer Vision,

Program Committee 2008, 2006 European Conference on Computer Vision,

Scientific Committee ROBUST 2008, Robust Biometrics: Understanding Science & Technology,

Program Committee 2007 International Cognitive Vision Workshop,

Program Committee 2007 International Workshop on Advances in Pattern Recognition,

Program Committee 2006 IEEE Conf. on Multisensor Fusion and Integration for Intelligent Systems,

Program Committee 2006, 2005, 2003 International Conference on Computer Vision Systems,

Program Committee 2005, 3rd International Conference on Advances in Pattern Recognition,

Program Committee, 2000, Third Workshop on Empirical Evaluation Methods in Computer Vision,

Program Committee, 2000, IEEE International Conference on Sensor Fusion for Intelligent Systems,

Program Committee, 2000, Fifth IEEE Workshop on Applications of Computer Vision,

Program Committee, 1999, IEEE Workshop on the Integration of Appearance and Geometric Methods in Object Recognition,

Program Committee, 1996, IEEE/SICE/RSJ International Conference on Multisensor Fusion and Integration for Intelligent Systems,

DARPA IUE (Image Understanding Environment) Technical Committee, 1990 – 1997,

Proposal Reviewer, Dutch Government, Texas Board of Higher Education, Army Research Office,

National Defense Science and Engineering Graduate Fellowship, Chair 1998, Panel, 1995 & 1997,

NSF Grant Review Panels, Eight since 1995,

Chair, 1995 DARPA Image Understanding Principal Investigators Workshop.

Reviewer

2021, 2020 IEEE 2020 Winter Conference on Applications of Computer Vision (WACV),]

2021 to 2017, 2014, IEEE Computer Vision and Pattern Recognition Conference (CVPR),

2020, 2013 IEEE International Conference on Automatic Face and Gesture Recognition (FG),

2019 International Conference on Computer Vision (ICCV),

2019 IEEE Conference on Virtual Reality and 3D User Interfaces (VR),

2019 FG 2019 Special Session on Human Health Monitoring based on Computer Vision,

2018 14th Asian Conference on Computer Vision (ACCV),

2018 IEEE Robotics and Automation Letters,

2017, 2015, 2006, IAPR International Conference on Biometrics,

2015, 2014, 2013, 2012, 2011 Washington Editorial Review Board (WERB reader) for NIST,

2018, 2016, 2014, 2012, 2010 International Conference on Pattern Recognition (ICPR),

2014 SIBGRAPI 2014 - Conference on Graphics, Patterns and Images,

2018, 2014, 2010 European Conference on Computer Vision (ECCV),

2013 IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS),

2012 IEEE International Conference on Technologies for Homeland Security,

ACM Computing Surveys,

ACM Transactions on Applied Perception,

Computer Methods in Applied Mechanics and Engineering,

Computer Vision and Image Understanding,

Evolutionary Computation Journal,
IEEE Transactions on Education,
IEEE Transactions on Evolutionary Computation,
IEEE Transactions on Image Processing,
IEEE Transactions on Information Forensics and Security,
IEEE Transactions on Pattern Analysis and Machine Intelligence,
IEEE Transactions on Robotics and Automation,
IEEE Transactions on Systems, Man and Cybernetics,
Image and Vision Computing,
International Journal of Pattern Recognition and Artificial Intelligence,
Journal of Electronic Imaging,
Machine Vision and Applications Journal.

University and Department Service

Computer Science Department Executive Committee, 2019 – 2021,
Computer Science Department, Operations Committee, (Chair) 2020, 2019, 2018, 2017, 2014, 2013, 2012, 20111, 20110, (Member) 2014, 2015, 2016,
Computer Science Department Action Team, 2018 – 2020,
Computer Science Department Faculty Search Committee, (Chair) 2019–2020, 2017–2018,
Psychology Department Faculty Search Committee, 2018–2019,
College of Natural Sciences, Scholarship Committee, 2017–2020, 2010–2014,
Computer Science Department, Oversee Website Design and Update, 2018, 2017, 2011, 2008, 2004,
Computer Science Department, Promotion and Tenure Committee, (Chair) 2012-2013,
Computer Science Department Ad Hoc Committee on Audio Video and Distance Education, 2010,
Computer Science Department Faculty Advisor to Student ACM Club, 2001-2010,
Computer Science Department Research Committee, 2008-2009, 2005-2006, 1993-1997,
Computer Science Department Undergraduate Committee, 2007-2008,
College of Natural Sciences URI scholarship committee, 2006-2007,
Computer Science Department Executive Committee, (alternate) 2006-2007,
Computer Science Department Awards Committee, (chair) 2006-2007,
Computer Science Department Graduate Committee, 2009-2010, 2004-2005, 1997-1998,
Computer Science Department Industrial Advisory Board, Co-Chair, 2002-2003,
Computer Science Department Facilities Committee Chair, 1998-2000, (Chair) 2001-2003,
Computer Science Department Faculty Search Committee, 1996,

Teaching: Courses Taught

Year	Semester	Course Number and Title		Cr.Hrs.	Enrollment
2020	Fall	CS410	Introduction to Computer Graphics	4	58
2020	Spring	CS510	Image Computation	4	18
2019	Fall	CS410	Introduction to Computer Graphics	4	71
2019	Spring	CS510	Image Computation	4	16
2018	Fall	CS410	Introduction to Computer Graphics	4	51
2018	Spring	CS510	Image Computation	4	18
2017	Fall	CS410	Introduction to Computer Graphics	4	62
2017	Spring	CT310	Web Development	4	55
2016	Fall	CS410	Introduction to Computer Graphics	4	62
2016	Fall	CS410	Introduction to Computer Graphics (Online Plus)	4	7
2016	Spring	CT 310	Web Development	4	47
2015	Fall	CS 253	Problem Solving with C++	4	97
2015	Spring	CS 510	Image Computation	4	11
2014	Fall	CS410	Introduction to Computer Graphics	4	38
2014	Spring	CT310	Web Development	4	63
2013	Fall	CS612	Topics in Computer Vision	4	4
2013	Fall	CS410	Introduction to Computer Graphics	4	29
2013	Spring	CT310	Web Development	4	39
2012	Fall	CS410	Introduction to Computer Graphics	4	23
2012	Spring	CS510	Image Computation	4	12
2011	Spring	CT310	Web Development	4	38
2010	Fall	CS612	Advanced Topics in Computer Vision	4	6
	Spring	CS510	Image Computation	4	12
2009	Fall	CS410	Introduction to Computer Graphics	4	16
	Spring	CT310	Web Development	4	37
2008	Fall	CS612	Topics in Computer Vision	4	3
	Spring	CT310	Web Development and Design	4	17
2007	Fall	CS410	Introduction to Computer Graphics	4	22
	Spring	CT310	Web Development	4	34
2006	Fall	CS612	Topics in Computer Vision	4	7
	Spring	CS510	Image Computation	4	13
2005	Fall	CS612	Topics in Computer Vision	4	4
2004	Fall	CS200	Algorithms and Data Structures	4	60
	Fall	CS410	Introduction - Computer Graphics	4	34
2003	Fall	CS192	First Year Seminar - Computer Science	2	26
	Fall	CS200	Algorithms and Data Structures	4	66
	Fall	CS612	Topics in Computer Vision	4	4
	Spring	CS510	Computer Graphics	4	14
2002	Fall	CS440	Introduction Artificial Intelligence	4	54
	Spring	CS200	Algorithms and Data Structures	4	34
	Spring	CS200	Algorithms and Data Structures	4	44
2001	Spring	CS410	Introduction Computer Graphics	4	23

Year	Semester	Course Number and Title		Cr.Hrs.	Enrollment
2000	Fall	CS153	Introduction to Java Programming	4	71
	Fall	CS612	Topics in Computer Vision	4	7
1999	Fall	CS410	Introduction Computer Graphics	4	50
	Spring	CS510	Computer Graphics	4	16
1998	Fall	CS253	Computer Programming Languages	4	67
	Fall	CS410	Introduction Computer Graphics	4	51
	Spring	CS510	Computer Graphics	4	19
	Spring	CS581	Empirical Research - Methods and Search II	4	9
	Spring	CS641	Topics in Artificial Intelligence	4	4
1997	Fall	CS410	Introduction Computer Graphics	4	52
	Fall	CS580	Empirical Research Methods and Search I	4	14
	Fall	CS581	Introduction to Computer Vision	4	13
	Fall	CS640	Topics in Artificial Intelligence	4	4
	Spring	CS540	Artificial Intelligence	4	10
1996	Fall	CS612	Topics in Computer Vision	4	8
1995	Fall	CS440	Introduction - Artificial Intelligence	4	19
	Spring	CS410	Introduction - Computer Graphics	4	37
1994	Spring	CS580	Fundamentals of Computer Vision	4	14

Teaching: Supervision & Advising

Post Docs and Research Associates

Yui Man Lui	*Post Doc*, 2010 – 2011.
David Bolme	*Post Doc*, 2011.
David Bolme	*Research Associate Level IV*, 2011 – 2012.
Yui Man Lui	*Research Associate Level III*, 2011 – 2012.

Current Graduate Advising

Mohamed Chaabane	Ph.D.	David White	Ph.D.
Albert Lionelle	Ph.D.	Rahul Bangar	M.S.
Dhruva Patil	Ph.D.	Likhitha Chandra	M.S.
Wen Qin	Ph.D. (Co-advisor)	Saurabh Deotale	M.S.
Ben Sattelberg	Ph.D.	Sonu Dileep	M.S. ECE
Ameni Trabelsi	Ph.D.	Viraj Shastri	M.S.

Ph.D. Students Finished

Hao Zhang	*Unsupervised Binary Code Learning for Approximate Nearest Neighbor Search in Large-scale Datasets*, January 2016.
Hessah Alsaaran	*Unsupervised Video Segmentation Using Temporal Coherence of Motion*, November 2015. (Co-Adivsed with Bruce Draper)
Mohammad Nayeem Teli	*Face and Object Detection with MOSSE Filters*, November 2013.
David Bolme	*Theory and Application of Optimized Correlation Output Filters*, November 2010.
Yui Man Lui	*Geometric Methods on Special Manifolds for Face Recognition*, April 2010.
Jason Denton	*Two Dimensional Projective Point Matching*, 2002.
Lance Forbes	*Object Recognition using an Extended Condensation Filter*, 2001.
Mark Stevens	*Reasoning About Object Appearance in the Context of a Scene*, 1999.

M.S. Students Finished

Heting Wang	*An Empathic Avatar in Task-Driven Human-Computer Interaction*, July 2020.
Matt Dragan	*Demonstrating That Dataset Domains are Largely Linearly Separable in the Feature Space of Common CNNs*, July 2020.
Joe Strout	*Multimodal Agents for Cooperative Interaction*, May 2020.
David White	*Same Data, Same Features: Modern Imagenet-Trained Convolutional Neural Networks Learn the Same Thing*, April 2020.
Shiyang Wu	*Smart Checkers Player: A Checker Playing Program with Sight*, ECE, May 2019.
Rutuja Patil	*A Real Time Video Pipeline for Computer Vision Using Embedded GPUs*, ECE, July 2016.
Nikhil Agnihotri	*Randomized IntraClass Distance Minimizing Binary Codes(RIDMBC) for Object Recognition*, May 2016.
Pooja Shahuraj Maknikar	*Toward an interactive Node.js based Eigenfaces Tutorial Website*, ECE, August 2015
Jatin Bhikadiya	*Performance Evaluation of Local Features for Object Discovery*, April 2015.
Rahul Dutta	*Video Alignment to a Common Reference*, December 2014.
Wimroy Dsouza	*Evaluating The Role of Context in 3D Theater Stage Reconstruction*, ECE, November 2014.
Somtirtha Roy	*Analysis of Slow Features for Person Re-Identification in Videos*, ECE, May 2014.
Hrushikesh Kulkarni	*Performance Evaluation of Feature Sets for Carried Object Detection in Still Images*, ECE, May 2014.
Arun Anbumani	*Object Tracking in Videos*, ECE, December 2013.
Karthik Kadappan	*Element Rearrangement for Action Classification on Product Manifolds*, April 2013.
Hao Zhang	*Assessing Soft Biometrics to Augment Face Recognition*, March 2013.
Keegan Patmore	*Evaluating the Performance of iPhoto Facial Recognition at the Biometric Verification Task*, March 2012.
Andres Alvarez	*Evaluating Features and Image Attributes for Face Classification using the Sparse Network of Winnows Algorithm*, 2009.
Ward Ian Fisher	*An Introduction to and Analysis of Scarecrow, the CSU Face Recognition System*, 2008.
Dean Eric Wetherby	*Registration of Biological Image Volumes Obtained from an Optical Coherence Microscope*, 2008.
Jilmil Saraf	*An Assessment of Alternative Features for a Semi-Naive Bayesian Face Detector on Single Face Images*, 2007.
Trent James Williams	*Ensemble of Classifiers for Face Identification*, 2006.
Charumathi Chandrasekaran	*An Evaluation of the Features used in the Viola and Jones' Face Detection Algorithm*, 2005.
Benjamin Randall	*Face Detection with a Semi-Naive Bayes Classifier*, 2005.
David Bolme	*Elastic Bunch Graph Matching*, 2003.
Marcio Luis Teixeira	*The Bayesian Intrapersonal/Extrapersonal Classifier*, 2003.
Kai She	*Evaluation of Face Recognition Algorithms*, 2002.
Wendy Yambor	*Analysis of PCA-based and Fisher Discriminant-Based Image Recognition Algorithms*, 2000.
Rachel Chittaranjan Patel	*Creating Panoramic Image Mosaics*, 1999.
Michael Croswell	*Sensitivity of Matching to 3D Pose when using Random Starts Local Search*, 1999.
Karthik Balasubramaniam	*A 3D Visualization System for the Image Understanding Environment*, 1998.
Anthony Schwickerath	*Simultaneous Refinement of Pose and Sensor Registration*, 1997.
Mark Stevens	*Obtaining 3D Silhouettes and Sampled Surfaces from Solid Models for use in Computer Vision*, 1995.

Undergraduate Independent Study / Honors Theses

Isaac Law	*Ray Traced Animation with Realistic Waves on Water*, 2019
Alex Undy	*Boolean Rendering: Ray Tracing Solids Defined by Boolean Expressions*, 2019,
Sarah Houlton	*Tidepool: A Study of Caustics in 3D Computer Graphics*, 2019,
Westin Musser	*Exploration of Face Detection and Expression Recognition in OpenCV*, 2018,
Matt Moxcey	*Advanced Ray Tracing*, 2017,
Michael Ferguson	*Electronic Meeting Systems: Where They Succeed and Where They Fail*, 2016,
Noah Al Hadidi	*Assessing Ways to Make Websites More Accessible to the Blind*, 2014
Rahul Jindal	*Radiosity: Illuminating Globally*, 2013,
Jared Smartt	*Analysis of Public CS Course Websites*, 2013,
Drew Mettlach	*HTML5 and JavaScript*, 2012,
Matthew Dunlap	*Developing Google Apps*, 2010,
Donovan Mikrot	*Wii Remote Gesture Interface*, 2009,
Tiffany Ralph	*On the Usability of Games to Teach Introductory Programming*, 2006,
Tony Schreiner	*STOMP: Schreiner's Tool for Object Model Production*, 1999.