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EDUCATION

Cornell University, Ithaca, NY. Ph.D. in Computer Science. *May 2001*
Dissertation: *Analysis and Representations for Automatic Comparison, Classification, and Retrieval of Digital Images*. Advisor: Dan Huttenlocher

Cornell University, Ithaca, NY. M.S. in Computer Science. *January 1997*
• Minor in Field of Cognitive Studies.

Princeton University, Princeton, NJ. A.B. *cum laude* in Physics. *June 1993*
Senior thesis topic: Computerized statistical analysis of structure in the universe.
• Certificate in Engineering Physics.

REFERREED JOURNAL ARTICLES

- N. Howe, S. Feng, and R. Manmatha, "Finding Words in Alphabet Soup: Inference on Freeform Character Recognition for Historical Scripts," to appear in *Pattern Recognition*.
- N. Howe, "Silhouette Lookup for Monocular 3D Pose Tracking," *Image and Vision Computing*, Volume 25, Issue 3, March 2007, pp. 331-341.

REFERREED CONFERENCE PAPERS

- S. Feng, N. Howe, and R. Manmatha, A Hidden Markov Model for Alphabet-Soup Word Recognition. International Conference on Frontiers in Handwriting Recognition, July 2008.
- N. Howe, "Recognition-Based Motion Capture and the HumanEva II Test Data," CVPR 2007 Workshop on Evaluating Human Motion.
- N. Howe, "Evaluating Lookup-Based Monocular Human Pose Tracking on the HumanEva Test Data," (extended abstract), *NIPS 2006 Workshop on Evaluating Human Motion*.
- N. Howe, "Boundary Fragment Matching and Articulated Pose Under Occlusion," IV Conference on Articulated Motion and Deformable Objects, July 2006.
- N. Howe, "Flow Lookup and Biological Motion Perception," *International Conference on Image Processing*, September 2005.
- N. Howe, T. Rath, and R. Manmatha, "Boosted Decision Trees for Word Recognition in Handwritten Document Retrieval," *ACM SIGIR Conference on Research and Development in Information Retrieval*, August 2005. N. Howe and A. Ricketson, "Improving the Boosted Correlogram," *International Conference on Image Analysis and Recognition*, September 2004.
- N. Howe, "Silhouette Lookup for Automatic Pose Tracking," *IEEE Workshop on Articulated and Nonrigid Motion*, June 2004.

- N. Howe, "A Closer Look At Boosted Image Retrieval," *International Conference on Video and Image Retrieval*, July 2003.
- N. Howe, "Boosted Image Classification: An Empirical Study," *Workshop on Machine Learning and Computer Vision*, July 2002.
- N. Howe, "Data as Ensembles of Records: Representation and Comparison," *Proceedings of the Seventeenth International Conference on Machine Learning*, 2000.
- N. Howe and D. Huttenlocher, "Integrating Color, Texture, and Geometry for Image Retrieval," *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, 2000.
- N. Howe, "Using Artificial Queries to Evaluate Image Retrieval," *IEEE Workshop on Content-Based Access of Image and Video Databases*, 2000.
- N. Howe, M. Leventon, and W. Freeman, "Bayesian Reconstruction of 3D Human Motion from Single-Camera Video," *Advances in Neural Information Processing Systems 12*, 2000.
- N. Howe, "Percentile Blobs for Image Similarity," *Proceedings of the IEEE Workshop on Content-Based Access of Image & Video Libraries*, 78-83, 1998.
- N. Howe and C. Cardie, "Examining Locally Varying Weights for Nearest Neighbor Algorithms", *Case-Based Reasoning Research and Development: Second International Conference on Case-Based Reasoning*, D. Leake and E. Plaza, eds., Springer, 455-466, 1997.
- C. Cardie, and N. Howe, "Improving Minority Class Prediction Using Case-Specific Feature Weights," *Proceedings of the Fourteenth International Conference on Machine Learning*, D. Fisher, ed., Morgan Kaufmann, 57-65, 1997.

GRANTS AS PRINCIPAL INVESTIGATOR

RUI: Multiple Information Sources for 3D Articulated Pose Tracking, NSF Award #0328741. Effective September 1, 2003 – August 31, 2005.

PRESENTATIONS OF REFERREED WORK

- A Hidden Markov Model for Alphabet-Soup Word Recognition*, oral presentation at the 11th International Conference on Frontiers in Handwriting Recognition, July 2008.
- Evaluating Lookup-Based Monocular Human Pose Tracking on the HumanEva Test Data*, oral presentation at the Neural Information Processing Systems Workshop on Evaluating Human Motion, December 2006.
- Boundary Fragment Matching and Articulated Pose Under Occlusion*, oral presentation at the IV Conference on Articulated Motion and Deformable Objects, July 2006.
- Flow Lookup and Biological Motion Perception*, poster presentation at the International Conference on Image Processing, September 2005.
- Boosted Decision Trees for Word Recognition in Handwritten Document Retrieval*, oral presentation at the ACM SIGIR Conference on Research and Development in Information Retrieval, August 2005.
- Improving the Boosted Correlogram*, poster presentation at the International Conference on Image Analysis and Recognition, September 2004.
- Silhouette Lookup for Automatic Pose Tracking*, oral presentation at the IEEE Workshop on Articulated and Nonrigid Motion, June 2004.
- A Closer Look At Boosted Image Retrieval*, oral presentation at the International Conference on Video and Image Retrieval, July 2003.
- Data as Ensembles of Records: Representation and Comparison*, oral presentation at the Seventeenth International Conference on Machine Learning, July 2000.
- Integrating Color, Texture, and Geometry for Image Retrieval*, poster presentation at the Conference on Computer Vision and Pattern Recognition, June 2000.
- Using Artificial Queries to Evaluate Image Retrieval*, oral presentation at the Workshop on Content-Based Access of Image and Video Databases, June 2000.
- Bayesian Reconstruction of 3D Human Motion from Single-Camera Video*, oral and poster presentation at Neural Information Processing Systems, December 1999.
- Percentile Blobs for Image Similarity*, oral presentation at the Workshop on Content-Based Access of Image & Video Libraries, June 1998.
- Examining Locally Varying Weights for Nearest Neighbor Algorithms*, oral presentation at the Second International Conference on Case-Based Reasoning, July 1997.

CODE RELEASES

- N. Howe, *Contour-Pruned Skeletonization*, 2006. [MATLAB implementation]
- N. Howe, *Foreground/Background Motion Segmentation Based on Graph Cut*, 2004.
- N. Howe, *Turning Angle and Chamfer Distance for Silhouette Comparison*, 2004.

OTHER PAPERS

- N. Howe, "Evaluating Recognition-Based Motion Capture on HumanEva II Test Data," in submission.
- N. Howe and A. Deschamps, "Better Background Subtraction Through Graph Cuts," Tech Report, www.arxiv.org/cs.CV/0401017
- N. Howe, "An Evaluation of Area Matching for Image Comparison and Retrieval," submitted for review to *Computer Vision and Image Understanding*.

- N. Howe, *Analysis and Representations for Automatic Comparison, Classification, and Retrieval of Digital Images*, Ph.D. Thesis, Cornell University, May 2001.
- N. Howe and C. Cardie, *Weighting Unusual Feature Types*, Tech Report, Cornell University Department of Computer Science, 1998.

OTHER PRESENTATIONS

- Finding Meaning in Alphabet Soup: Segmentation-Free Letter Detection in Longhand Script*, Sigma Xi presentation, October 16, 2007.
- Experiments with Boosting for Handwritten Word Recognition*, work-in-progress presented at CIIR, UMass Amherst, October 14, 2004.
- Who Wrote George Washington's Letters?* Sigma Xi talk, March 5, 2005.
- Pose Tracking via Silhouette Lookup*, presented at Boston University, January 15, 2004.
- See Jane Run: Tracking Pose via Silhouettes, Sigma Xi talk, Nov. 7, 2003.
- Hands-Free Tracking*, work-in-progress, presented at MIT AI lab, July 21, 2003.
- Digital Images from the Computer's Perspective*, guest lecture in course on digital art, New York University, November 3, 2000.
- Digital Images and Brain Images: Shall Ever The Twain Meet?*, guest lecture in cognitive studies proseminar, Cornell University, October 31, 2000.
- A Principled Approach to Image Retrieval*, oral presentation of thesis proposal, Cornell University, December 14, 1998.
- Where's Waldo? Cognitively Significant Image Segmentation*, Cognitive Studies Annual Graduate Student Research Forum, Cornell University, October 3, 1998.
- Determining Image Similarity by Computer*, poster presentation, First Annual Northeast Cognitive Science Society (NECSS) Graduate Conference, May 1-2, 1998.
- Perceptual Similarity in Image Databases*, Cognitive Studies Annual Graduate Student Research Forum, Cornell University, November 1, 1997.
- Class-Based Weights for k-Nearest Neighbors Algorithms*, Cognitive Studies Annual Graduate Student Research Forum, Cornell University, October 19, 1996.

COURSES TAUGHT

Smith College:

Computer Science II, Operating Systems, Computer Vision and Image Processing, How Computers Work, How The Internet Works, Interactive Web Documents

Cornell University:

Multimedia Web Documents (Lecturer), *Introduction to Computer Science* (Section Instructor), *The Computer Age* (Lecturer)

Kingsland High School:

Algebra I, Algebra II, Geometry, Trigonometry, Physics, French I, French II, Principles of Technology. (Classroom Teacher)

PROFESSIONAL RESPONSIBILITIES

- | | |
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| Chair, Committee on Educational Technology (Smith) | 2007-2008 |
| Chair, Junior Faculty in Sciences & Engineering (Smith) | 2002-2003 |

OTHER HONORS AND AWARDS

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| NSF Cognitive Studies Trainee Fellowship in computer science. | 1995-1999 |
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NSF Graduate Research Fellowship , Honorable Mention	1996
Sigma Xi , scientific research honorary society.	1993-present
National Merit Scholar	1989

PROFESSIONAL EXPERIENCE

Associate Professor , Smith College	2008-Present
Assistant Professor , Smith College	2001--2008
Course Lecturer , Cornell University Summer Program <i>Multimedia Web Documents</i>	Summer 2001
Research Assistant , Cornell University Computer Vision Group, Department of Computer Science.	1999-2001
Teaching Assistant & Lecturer , Cornell University <i>Introduction to Computer Programming.</i>	Fall 1998
Research Intern , Mitsubishi Electric Research Lab Computer vision group, with Bill Freeman.	Summer 1998
Research Assistant , Cornell University NLP and ML lab, Department of Computer Science.	Summer 1997
Course Lecturer , Cornell University Summer Program <i>The Computer Age.</i>	Summer 1996
High School Teacher , Kingsland School, Kingsland, AR Algebra, geometry, trigonometry, physics, and French.	1993-1995
Computer Programmer , CRIHAN, Mont-Saint-Aignan, France. Distributed calendar software.	Summer 1992
Computer Programmer , Yale University. Scientific computing and visualization, Department of Mechanical Engineering.	Summers 1991, 1989
Math Camp Counselor , University of Chicago. Math and computer enrichment for gifted Chicago area high school students.	Summers 1991, 1989