

Jonathan J. Hull

Ricoh Innovations, Inc.
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Summary

Research manager and inventor with a passion for identifying novel solutions and developing technologies that fill customer needs. Extensive experience building patent portfolios that anticipate how new solutions will be used.

Specialties

Digital image analysis and recognition, document imaging; Intellectual property development; C programming in Windows or Unix is second nature.

Experience

Research Team Lead at Ricoh Innovations, Inc.

December 1994 - present

My group is currently investigating various basic software and hardware technologies for the Internet of Things. We are developing intelligent sensors and devices that extend connectivity, capture data and connect people.

Led the research group that identified the visual search problem for Ricoh (also known as paper-based augmented reality), developed new recognition technologies specialized for document images, and connected the technical solution to Ricoh's core competence in the printer driver. Identified the version of this approach that will lead to widespread acceptance in the future --image recognition completely on the phone. Most importantly, this was all started before widespread acknowledgment of the commercial importance of visual search. Recognizing this opportunity, I led the development of a patent portfolio containing over 34 U.S. patent applications that covers many commercially significant aspects of visual search, both current and future.

Led the research group that identified several multimedia related applications and devices for Ricoh. This included meeting recording and presentation recording systems, as well as paper-based interfaces to multimedia. Upon identification of multimedia printing as possible future product opportunity, I led the development of a patent portfolio containing over 21 U.S. patent applications that covers many aspects of multimedia printing, including devices, interfaces, and system architectures.

Led an invention group that identified the combination of printing paper documents with the application of RFID tags as a future product category suitable for Ricoh. This resulted in a portfolio containing six U.S. patent applications.

Led the research group that developed the infinite memory multifunction machine. My work on this project was credited with inspiring Ricoh's development of the eCabinet --a stand-alone document management appliance. This work was also covered with a comprehensive patent portfolio.

Research Associate Professor and Member of the Graduate Faculty at Department of Computer Science, SUNY at Buffalo, 1993 -1994 (1 year)

Led a research group that created numerous novel techniques that combine information about language syntax and semantics with computer vision techniques to improve the accuracy of text recognition. In addition to over 25 technical papers, we also created two U.S. patents.

Principal advisor of two Ph.D. students and several M.S. candidates.

Associate Director at SUNY Buffalo -CEDAR Research Group, 1982 -1994 (12 years)

Co-led a research group that started with two people in 1982 and in the course of 12 years grew to over 100 individuals that ended up creating several pioneering solutions for postal OCR. This included address block location, machine-print address interpretation, and real-time address recognition. My work was credited with enabling practical handwritten address recognition --a problem that had previously been thought insoluble. Eventually, this was embodied in software that ran in 224 postal processing centers throughout the United States and was said to have saved the United States Postal Service more money in one year than the entire amount they ever spent on research and development.

Research Assistant Professor at Department of Computer Science, SUNY at Buffalo, 1987 -1993 (6 yrs)

Identified many research problems and recruited and worked with an incredibly talented and motivated group of graduate students in developing solutions to those problems. This resulted in numerous refereed publications and over 15 Ph.D. and M.S. theses that it was my pleasure to have co-advised.

Education

Ph.D., State University of New York at Buffalo, (Computer Science), February, 1988, Dissertation: "A Computational Theory of Visual Word Recognition"

M.S., State University of New York at Buffalo, (Computer Science), 1983.

B.A., State University of New York at Buffalo, (Computer Science and Statistics -double major), 1980.

Honors and Awards

Fellow, Int. Assoc. of Pattern Recognition (IAPR), Sept. 6, 2000.

Ricoh Group Patent Master, May 27, 2010. For being an inventor of over 100 issued U.S. patents.

Ricoh Group Junior Patent Master, May 28, 2008. For being an inventor of over 50 issued U.S. patents.

Best Industrial Related Paper Award, IAPR 2010 Int. Conf. on Pattern Recognition for "Toward Massive Scalability in Image Matching."

Best Presentation Award, ACM Hotmobile 2010, for "Mobile Image Recognition: Architectures and Tradeoffs."

Best Paper Award, IEEE 2006 Int. Conf. on Multimedia and Expo, for "Computing a Multimedia Representation for Documents Given Time and Display Constraints."

Appreciation Award from the Chairman of Ricoh Silicon Valley, Inc., Aug. 1998. *In recognition for the original inspiration of the memory multifunction concept and its later reduction to practice and transfer to Ricoh Co. Ltd. This body of work has changed the way we operate at Ricoh Silicon Valley, provided a new starting point from which future research is considered and inspired business divisions throughout Ricoh. This work led directly to Ricoh's introduction of the Ridoc and E-Cabinet products.*

Outstanding Young Investigator, Int. Conf. on Document Analysis and Recognition, 1997

Professional Service

1. **Area Editor**, *Computer Vision and Image Understanding*, 1999 - 2012.

2. **Associate Editor**, *Pattern Recognition*, 1989 - 2005.

3. **Member, Editorial Board**, *Int. Journal on Document Analysis and Recognition*, 1998 - 2004.

4. **Associate Editor**, *IEEE Trans. on Pattern Analysis and Machine Intelligence*, Dec. 1994 - Dec. 1998.

5. **Referee**: Machine Vision and Applications, Computer Vision, Graphics, and Image Processing: Image Understanding, International Journal of Pattern Recognition and Artificial Intelligence, IEEE Transactions on Fuzzy Systems, Journal of Visual Communication and Image Representation, IEEE Computer, Optical Engineering, IEEE Transactions on Systems, Man, and Cybernetics, IEEE Transactions on Software Engineering, International Conference on Pattern Recognition, 1988, 1998, International Conference on Document Analysis and Recognition, 1991, 1995, 1997. In addition, I served on numerous program committees, chaired conference sessions, etc. See my curriculum vita for details.

Publications

3 books (co-edited), 23 journal articles, 12 book chapters, 2 encyclopedia articles, 108 conference papers, and 125 issued U.S. patents. See curriculum vita for details.

Interests

Photography and aviation. FAA Commercial Pilot Certificate with Single Engine Land, Single Engine Sea, Multi-engine Land, Instrument, and Glider ratings.

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Education

Ph.D., State University of New York at Buffalo, (Computer Science), February, 1988, Dissertation: "A Computational Theory of Visual Word Recognition"
M.S., State University of New York at Buffalo, (Computer Science), 1983.
B.A., State University of New York at Buffalo, (Computer Science and Statistics -double major), 1980.

Professional Experience

1. Team Lead, Intelligent Network Systems and Multimedia Document Analysis Groups, Ricoh Innovations, Inc., California Research Center, Menlo Park, CA, Dec. 1994 - present.
2. Associate Director, Center of Excellence for Document Analysis and Recognition, State University of New York at Buffalo (SUNYAB), November, 1990 -December, 1994.
Research Associate Professor of Computer Science and Member of the Graduate Faculty, Sept. 1993 - Dec. 1996.
Research Assistant Professor of Computer Science, Sept. 1987 - Sept. 1993.
3. Visiting Senior Research Scientist, Ricoh California Research Center, Menlo Park, California, Nov. 1993 - May, 1994.
4. Research Associate (full time), Dept. of Computer Science, State University of New York at Buffalo, Jan. 1984 - Sept. 1987.
5. Teaching Assistant, Dept. of Computer Science, State University of New York at Buffalo, 1982-1984.
6. Research Assistant, Dept. of Computer Science, State University of New York at Buffalo, 1980 -1982.

Honors

1. Fellow, International Association for Pattern Recognition, September, 2000.
2. Outstanding Young Investigator, International Conference on Document Analysis and Recognition, Ulm, Germany, August 20, 1997.
3. Appreciation Award from the Chairman and President of Ricoh Silicon Valley, Inc., August 31, 1998.
The citation reads: *In recognition for the original inspiration of the memory multifunction concept and its later reduction to practice and transfer to Ricoh Company, Ltd. This body of work has changed the way we operate at Ricoh Silicon Valley, provided a new starting point from which future research is considered and inspired business divisions throughout Ricoh.*
This work led directly to the introduction of two products by Ricoh: the *Ridoc Cabinet* (in Japan; formerly called *Saric*) and the *E-Cabinet* (in the U.S.). The automatic capture of images of copied documents was added to Ricoh's MFP's and is still available today.

4. Best Paper Award, IEEE 2006 Int. Conf. on Multimedia and Expo, for "Computing a Multimedia Representation for Documents Given Time and Display Constraints," with B. Erol, K. Berkner, and S. Joshi.
5. Best Presentation Award, ACM Hotmobile 2010, for "Mobile Image Recognition: Architectures and Tradeoffs."
6. Ricoh Group Junior Patent Master, May 28, 2008. In recognition of being an inventor of over 50 issued U.S. patents.

Grants

1. Principal Investigator, Unrestricted Grant in Support of Research, Ricoh Corporation, California Research Center, Oct. 7, 1992; total amount: \$10,000.
2. Principal Investigator, Language Syntax to Improve OCR Performance, U.S. Government, June 1, 1991 to Dec. 31, 1994; total amount: \$600,000.
3. Co-Principal Investigator (with S.N. Srihari), "Japanese Document Understanding," U.S. Government, Sept. 1, 1993 to Aug. 31, 1994; total amount: \$460,000.
4. Co-Principal Investigator (with S.N. Srihari), "Preliminary Address Recognition Unit Investigation," Office of Advanced Technology, United States Postal Service, Dec. 1, 1990 to Dec. 31, 1992; total amount: \$500,000.
5. Co-Principal Investigator (with S.N. Srihari), "Recognition of Handwritten ZIP Codes," Office of Advanced Technology, United States Postal Service, Sept. 1, 1986 to Dec. 31, 1992; total amount: \$1,752,698.
6. Co-Principal Investigator (with S.N. Srihari), "Use of Contextual Information for Automatic Postal Address Interpretation," Office of Advanced Technology, United States Postal Service, Aug. 1, 1988 to Dec. 31, 1992; total amount: \$1,089,997.
7. Co-Principal Investigator (with S.N. Srihari), "Remote Bar Coding Handwritten ZIP Code Recognition," Office of Advanced Technology, United States Postal Service, Aug. 14, 1989 to Nov. 30, 1990; total amount \$401,192.

Thesis Committees

1. Chi Fang, Ph.D., "Word-based Substitution Cipher for Text Recognition," Computer Science, July, 1997 (chair).
2. Tao Hong, Ph.D., "Integrated Visual and Language Constraints for Text Recognition," Computer Science, Sept. 1995 (chair).
3. Siamak Khoubyari, M.S., "Word Image Matching for Text Recognition," Computer Science, May, 1992 (chair).
4. Stephen W. Lam, Ph.D., "A computational framework for adaptive reading in document image understanding," Computer Science, Oct. 1994 (member).
5. Jaeyoung Rhi, Ph.D., "The Analysis of Orientationally Selective Edge Operators and Orientation Response Profile (ORP) Based Curvature Detection," Computer Science, Oct. 1993 (member).
6. Mou-Yen Chen, Ph.D., "Cursive script word recognition with a hidden Markov model," Electrical and

- Computer Engineering, Sept. 1993 (outside reader).
7. Craig Burgler, M.S. project, "A histogram-based neural network character recognition algorithm," May, 1993 (chair).
 8. Tin Kam Ho, Ph.D., "A Multiple Classifier Approach to Visual Word Recognition," Computer Science, May 1992, (co-chair).
 9. Ginige De Silva, M.S., "Syntax-Directed Text Segmentation in Page Layout Analysis," Electrical and Computer Engineering, Sept. 1993 (co-chair).
 10. Dipankar Talukdar, M.S., "An adaptive thresholding technique and its VLSI implementation," May, 1993 (member).
 11. Chandra Bharathi, M.S., "A run-length coded data structure for database compression and its implementation," May, 1993 (member).
 12. Sanjay Fotedar, M.S., "Multiple simultaneous Hough transform implementation in parallel hardware," Jan. 1993 (member).
 13. Madhu Srinivasan, M.S. "Simulation of a laboratory mail sorting unit," May, 1993 (member).
 14. Kenneth N. Smith, M.S., "RDS: A Remote Device Access System for Unix," Electrical and Computer Engineering, April, 1990, (member).
 15. John Favata, Ph.D., "Recognition of Handwritten Words Using a Multi-level Generate-and-test Methodology," Computer Science, Dec. 1992 (member).

Professional Activities

- Member, Program Committee, IEEE Int. Conf. on Document Analysis and Recognition (ICDAR), Washington, D.C., Aug. 25-28, 2013.
- Member, Technical Program Committee, IAPR Int. Conf. on Pattern Recognition (ICPR), Tsukuba, Japan, Nov. 11-15, 2012.
- Member, Program Committee, ACM Symposium on Applied Computing, Document Engineering Track, Trento, Italy, March 25-29, 2012.
- Member, Program Committee, IEEE Int. Conf. on Document Analysis and Recognition (ICDAR), Beijing, China, Sept. 18-21, 2011. Member, Program Committee, ACM Symposium on Applied Computing, Document Engineering Track, Taichung, Taiwan, March 21-25, 2011.
- Member, Program Committee, IAPR Int. Conf. on Pattern Recognition (ICPR), Istanbul, Turkey, Aug. 23-26, 2010.
- Member, Program Committee, ACM Symposium on Applied Computing, Document Engineering Track, Sierre, Switzerland, March 22-26, 2010.
- Member, Program Committee, IEEE Int. Conf. on Document Analysis and Recognition (ICDAR), Barcelona, Spain, July 26-29, 2009.
- Member, Program Committee, IAPR Int. Conf. on Pattern Recognition (ICPR), Tampa, FL, Dec. 8-11, 2008.
- Member, Program Committee, ACM Symp. on Applied Computing, Document Engineering Track, Fortaleza, Brazil, March 16-20, 2008.
- Member, Program Committee, ACM Conf. on Mobile and Ubiquitous Multimedia (MUM), Umea,

Switzerland, Dec. 3-5, 2008.

Member, Program Committee, ACM Conf. on Mobile and Ubiquitous Multimedia, Oulu, Finland, Dec. 12-14, 2007.

Member, Program Committee, Workshop on Camera-based Document Analysis and Recognition, Int. Conf. on Document Analysis and Recognition (ICDAR), Curitiba, Brazil, Sept. 23-26, 2007.

Member, Program Committee, Int. Conf. on Document Analysis and Recognition (ICDAR), Curitiba, Brazil, Sept. 23-26, 2007.

Member, Program Committee, Int. Workshop on Advances in Pattern Recognition, Plymouth, U.K., July 21-23, 2007.

Member, Program Committee, ACM Workshop on Mobile and Ubiquitous Multimedia, Stanford, CA, Dec. 4-6, 2006.

Member, Program Committee, ACM Symposium on Applied Computing, Document Engineering Track, Dijon, France, April 23-27, 2006.

Member, Program Committee, 2nd Int. Workshop on Document Image Analysis for Libraries, Lyon, France, April 27-28, 2006.

Member, Program Committee, ACM Conf. on Mobile and Ubiquitous Multimedia, Christchurch, New Zealand, Dec. 8-10, 2005.

Member, Program Committee, Int. Postgraduate Conf. on Pattern Analysis for Applications in Physical and Life Sciences in Bath, U.K., Sept. 12-15, 2005.

Member, Program Committee, International Conference on Document Analysis and Recognition, Seoul, Korea, Aug. 29 -Sept. 1, 2005.

Member, Program Committee, Document Engineering Track, ACM Symposium on Applications of Computing, Santa Fe, New Mexico, March 13-17, 2005.

Member, Program Committee, IEEE Workshop on Applications of Computer Vision, Breckenridge, CO, Jan. 5-7, 2005.

Member, Program Committee, Third International Conference on Mobile and Ubiquitous Multimedia, College Park, MD, Oct. 27-29, 2004.

Session Chair, International Conference on Pattern Recognition, Cambridge, U.K., Aug. 24, 2004.

Member, Program Committee, Workshop on Document Imaging and Analysis for Libraries, Palo Alto Research Center, Palo Alto, CA, Jan. 14-16, 2004.

Member, Program Committee, Workshop on Document Analysis and Information Retrieval, IEEE Conference on Computer Vision and Pattern Recognition, Madison, Wisconsin, June 16-22, 2003.

Member, Program Committee, IEEE Conference on Computer Vision and Pattern Recognition, Madison, Wisconsin, June 16-22, 2003.

Member, Program Committee, Document Recognition and Retrieval X, SPIE Conference, San Jose, California, January 20-24, 2003.

Member, Program Committee, Document Recognition and Retrieval IX, SPIE Conference, San Jose, California, January 21-22, 2002.

Member, Program Committee and Session Chair, Sixth International Conference on Document Analysis and Recognition (ICDAR01), (sponsored by IAPR), Seattle, Washington, September, 2001.

Member, Program Committee and Session Chair, Document Recognition and Retrieval VIII, SPIE Conference, San Jose, California, January 26-27, 2001.

Member, Program Committee, Fifth IEEE Workshop on Applications of Computer Vision (WACV 2000), Palm Springs, CA, December 4-6, 2000.

Member, Program Committee, IWFHR-VII, Seventh International Workshop on Frontiers in Handwriting Recognition, (sponsored by IAPR), Amsterdam, The Netherlands, September 11-13, 2000.

Member, Program Committee, IEEE Conference on Computer Vision and Pattern Recognition, Hilton Head, South Carolina, June 13-15, 2000.

Member, Selection Committee for Editor-in-Chief, IEEE Transactions on Pattern Analysis and Machine Intelligence, May, 2000.

Member, Program Committee and Session Chair, Document Recognition and Retrieval VII, SPIE Conference, San Jose, California, January 26-27, 2000.

Member, Program Committee, Document Recognition and Retrieval VI, SPIE Conference, San Jose, California, January 27-28, 1999.

Co-chair, Program Committee, Fifth International Conference on Document Analysis and Recognition (ICDAR99), (sponsored by IAPR), Bangalore, India, September, 1999.

Member, Program Committee and Session Chair, Third IAPR Workshop on Document Analysis Systems, Nagano, Japan, November, 4-6, 1998.

Co-chair, Program Committee, Sixth International Workshop on Frontiers in Handwriting Recognition, Taejon, Korea, September, 1998.

Member, Best Industrial Paper Committee, International Association for Pattern Recognition (IAPR) International Conference on Pattern Recognition (ICPR), Brisbane, Australia, Sept. 1998.

Member, Program Committee, IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR98), Santa Barbara, CA, June 23-25, 1998.

Session Chair, Document Recognition V, SPIE Conference, San Jose, California, January 27-29, 1998.

Session Chair, Fourth International Conference on Document Analysis and Recognition, (sponsored by IAPR), Ulm, Germany, August 18-20, 1997.

Member, Program Committee, IEEE Computer Society Workshop on Document Image Analysis, San Juan, Puerto Rico, June 20, 1997.

Co-Chair, Document Recognition IV, SPIE Conference, San Jose, California, February 8 – February 14, 1997.

Co-Chair, IAPR Workshop on Document Analysis Systems, Malvern, Pennsylvania, Oct. 14-16, 1996.

Member, Program Committee, Fifth International Workshop on Frontiers in Handwriting Recognition (IWFHR5), (sponsored by IAPR), University of Essex, England, September 2-5, 1996.

Member, Program Committee, SSPR'96, IAPR International Workshop on Structural and Syntactic Pattern Recognition, Leipzig, Germany, August 20-23, 1996.

Member, Program Committee for Document Analysis, Fifth Annual Symposium on Document Analysis and Information Retrieval, University of Nevada at Las Vegas, April, 1996.

Co-Chairman, Document Recognition III, SPIE Conference, San Jose, California, Jan. 28 – Feb. 2, 1996.

Co-Chair, Publicity Committee, and Session Chairman, ICDAR '95: Third International Conference on Document Analysis and Recognition, (sponsored by IAPR), Montreal, Canada, Aug. 14-16, 1995.

Member, Program Committee for Document Analysis, Fourth Annual Symposium on Document Analysis and Information Retrieval, University of Nevada at Las Vegas, April, 1995.

Session Chair, Document Recognition Conference, IS&T/SPIE 1995 International Symposium on Electronic Imaging: Science and Technology, San Jose, California, February, 1995.

Member, Organizing Committee, IAPR Workshop on Document Analysis Systems (DAS94), Kaiserslautern, Germany, October 18-20, 1994.

Chair, Program Committee for Document Analysis, Third Annual Symposium on Document Analysis and Information Retrieval, University of Nevada at Las Vegas, April 11-13, 1994.

Member, Systems Committee, Second Census Optical Character Recognition Systems Conference, Sponsored by the United States Bureau of the Census, conducted by the National Institute of Standards and Technology (formerly NBS), January, 1994.

Session Chair, Session on Databases for OCR, International Conference on Document Analysis and Recognition, (sponsored by IAPR), Tsukuba Science City, Japan, October 20-22, 1993.

Session Chair, Panel on Issues in Database Design, NATO Advanced Study Institute on Fundamentals in Handwriting Recognition, Chateau de Bonas, France, June 21 -July 3, 1993.

Member, Organizing Committee and Chair of Panel on Databases, Third International Workshop on Frontiers in Handwriting Recognition, (sponsored by IAPR), SUNY at Buffalo, May 25-27, 1993.

Member, Program Committee, Symposium on Document Analysis and Information Retrieval, University of Nevada at Las Vegas, April 26-28, 1993.

Session Chair, Classification and Recognition Systems, Character Recognition Technologies Conference, IS&T/SPIE 1993 International Symposium on Electronic Imaging: Science and Technology, San Jose, California, Feb. 1-2, 1993.

Co-chair, International Association for Pattern Recognition (IAPR) TC-11 Subcommittee on Databases for Off-Line Handwriting Recognition, September, 1992 -September, 1994. Result: CDROM database published by CEDAR and USPS. Described in paper in IEEE PAMI, May, 1994.

Member, Systems Committee, First Census Optical Character Recognition Systems Conference, Sponsored by the United States Bureau of the Census, conducted by the National Institute of Standards and Technology (formerly NBS), May 27-28, 1992.

Member, Panel on Imaging Problems and Solutions Workshop on Character Recognition and Digitizer Technologies, 1992 SPIE/IS&T Symposium on Electronic Imaging: Science and Technology, San Jose, California, Feb. 11, 1992.

Member, Scientific Committee, and Session Chairman, Second International Workshop on Frontiers in Handwriting Recognition, Bonas, France, Sept. 23-27, 1991.

Session Chair, Fourth USPS Advanced Technology Conference, Washington, D.C., Nov. 5, 1990.

Co-chair -Discussion Group on OCR and Session Chairman, Workshop on Syntactic and Structural Pattern Recognition, Murray Hill, New Jersey, June 13-15, 1990.

Co-chair, Subcommittee on Databases for Handwriting Recognition, International Workshop on Frontiers in Handwriting Recognition, April 1990 -1992.

Co-chair -General Session and Session Chair, International Workshop on Frontiers in Handwriting Recognition, Montreal, Canada, April 3, 1990.

Chair (Acting), Committee on Text Processing (TC-11), Int. Assoc. for Pattern Recognition, ICPR, Rome, Italy, Nov. 1988.

Session Chair, International Conference on Pattern Recognition, Rome, Italy, Nov., 1988.

Invited Presentations

- Dec. 17, 2009, "Linking Paper Documents to Offline Information with Visual Search," Nokia Research Center Palo Alto.
- Dec. 3, 2009, "Linking Paper Documents to Offline Information with Visual Search," Stanford Workshop on Mobile Visual Search.
- March 9, 2007, "Paper-based and Mobile Multimedia Document Browsing Techniques," Yahoo Research Berkeley.
- March 16, 2007, "Paper-based and Mobile Multimedia Document Browsing Techniques," Nokia Research Center Palo Alto.
- April 10, 2007, "Paper-based and Mobile Multimedia Document Browsing Techniques," U.C. Berkeley Institute of Design.
- Oct. 9, 1995, "Content Based Retrieval for Document Images," University of California at Berkeley, Digital Libraries Seminar.
- Aug. 13, 1995, "Databases in Handwritten Text Recognition Research," Tutorial presentation at the Third International Conference on Document Analysis and Recognition (ICDAR), (sponsored by IAPR) Montreal, Canada.
- July 27, 1995, "Techniques for Document Image Database Retrieval and OCR," University of Nebraska at Lincoln, Symposium on Trends in Document Analysis.
- May 19, 1995, "Combinations of Visual and Language Information in Text Recognition," Xerox Palo Alto Research Center, Machine Perception Seminar, Palo Alto, California.
- Oct. 17, 1994, "Language Constraints in Text Recognition," AEG -Daimler Benz Research Institute, Ulm, Germany.
- Aug. 5-6, 1994, "Language Syntax in OCR" and "Handwritten Postal Address Recognition," University of Nebraska at Lincoln, Symposium on Trends in Document Analysis.
- May 26, 1994, "Language-level Information in Text Recognition," OCR Research Group, IBM Research Center, Almaden, California.
- Sept. 27, 1993, "Language Models for Improving OCR Performance," SUNY at Stony Brook, Department of Computer Science.
- June 21, 1993, "Language-level Syntactic and Semantic Constraints Applied to Word Recognition," and "Large Database Organization for Document Images," NATO Advanced Study Institute on Fundamentals in Handwriting Recognition, Chateau de Bonas, France.
- May 20-22, 1993, "Text recognition techniques in OCR systems," Korean National Conference on Character Recognition, Chungbuk University, Republic of Korea.
- Feb. 2, 1993, "Language-level syntactic constraints in OCR processes," Fuji Xerox Palo Alto Laboratory, Palo Alto, California.
- Dec. 7, 1991, "Evaluation of Character Recognition Algorithms," NIPS Workshop on Neural Networks for Handwriting Recognition, Denver, Colorado.
- July 9-10, 1991, "Text Recognition Algorithms and Research Directions," Industrial Technical Research Institute, Hsinchu, Taiwan, Republic of China.

- Oct. 15, 1990, "Evaluation Methods for Laboratory Character Recognition," National Institute of Standards and Technology (formerly the National Bureau of Standards), Washington, D.C.
- June 27, 1990, "State of the Art in Handwritten Character Recognition," MITRE Conference on Document Imaging in the Federal Government, Washington, D.C.
- April 2, 1990, "Multiple Algorithms for Handwritten Character Recognition," International Workshop on Frontiers in Handwriting Recognition, Montreal, Canada.
- Feb. 9, 1989, "Language Syntax in Visual Word Recognition," AT&T Bell Laboratories, Murray Hill, New Jersey.
- Aug. 24, 1988, "Feature Selection and Language Syntax in Text Recognition," COST-13 Workshop: From The Pixels to the Features, Bonas, France. May 20, 1987, "A Computational Model for Human and Machine Reading," SPSE 40th Annual Symposium on Hybrid Imaging Systems, Rochester, New York.

Consulting Experience

Arvin/Calspan Advanced Technology Center, Buffalo, New York. Algorithmic design for automatic fingerprint classification for the Federal Bureau of Investigation, 1991.

Professional Society Memberships

1. Association for Computing Machinery, 1980-present.
2. Senior Member, Institute of Electrical and Electronics Engineers, 2011-present; Member, 1981-2011.
3. Association for Computational Linguistics, 1982 -1992.
4. American Association for Artificial Intelligence, 1983 -1990.

Referee Activities

1. **Area Editor**, *Computer Vision and Image Understanding*, 1999 -2011.
2. **Associate Editor**, *Pattern Recognition*, 1989 - 2005.
3. **Member, Editorial Board**, *Int. Journal on Document Analysis and Recognition*, 1998 - 2004.
4. **Associate Editor**, *IEEE Trans. on Pattern Analysis and Machine Intelligence*, Dec. 1994 - Dec. 1998.
5. **Referee**: Machine Vision and Applications, Computer Vision, Graphics, and Image Processing: Image Understanding, International Journal of Pattern Recognition and Artificial Intelligence, IEEE Transactions on Fuzzy Systems, Journal of Visual Communication and Image Representation, IEEE Computer, Optical Engineering, IEEE Transactions on Systems, Man, and Cybernetics, IEEE Transactions on Software Engineering, International Conference on Pattern Recognition, 1988, 1998, International Conference on Document Analysis and Recognition, 1991, 1995, 1997.

Publications

books

1. J.J. Hull and S.L. Taylor (editors), "Document Analysis Systems II," World Scientific Pub. Co., 1998.
2. L. Vincent and J.J. Hull (editors), "Document Recognition IV," Society for Photo-optical Instrumentation Engineers, 1997.
3. L. Vincent and J.J. Hull (editors), "Document Recognition III," Society for Photo-optical Instrumentation Engineers, 1996.

journal papers

1. P.E. Hart, K. Piersol, and J. J. Hull, "Refocusing Multimedia Research on Short Clips," *IEEE Multimedia*, v. 12, no. 3, July-Sept. 2005, 8-13.
2. J.J. Hull and P.E. Hart, "Toward Zero-Effort Personal Document Management," *IEEE Computer*, v. 34, no. 3, March, 2001, 30-35.
3. J.J. Hull and P.E. Hart, "Towards zero-effort personal document management: A new paradigm for users," *Imaging and Visual Computing*, v. 29 no. 3, 2000, 232-238.
4. D.S. Lee and J.J. Hull, "Detecting Duplicates Among Symbolically Compressed Images in a Large Document Database," *Pattern Recognition Letters*, Special Issue on Image and Video Indexing, v. 22, April, 2001, 545-550.
5. J.J. Hull, "Document image similarity and equivalence detection," *International Journal on Document Analysis and Recognition*, v. 1 no. 1, February, 1998, 37-42. Invited to appear.
6. J. Zhu, T. Hong, and J.J. Hull, "Image-based keyword recognition in oriental language document images," *Pattern Recognition*, vol. 30, no. 8, August, 1997, 1293-1300.
7. J.J. Hull, "Performance evaluation for document analysis," *International Journal of Imaging Systems and Technology*, vol. 7, 1996, 357-362.
8. J.J. Hull, "Incorporating language syntax in visual text recognition with a statistical model," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, v. 18, no. 12, Dec. 1996, 1251-1256.
9. S. Khoubyari and J.J. Hull, "Font and function word identification in document recognition," *Computer Vision and Image Understanding*, Vol. 63, No. 1, January, 1996, 66-74.
10. E. Cohen, J.J. Hull, and S.N. Srihari, "Control structure for interpreting handwritten addresses," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Oct. 1994, 1049-1055.
11. J.J. Hull, "A database for handwriting recognition research," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, May, 1994, 550-554.
12. G. DeSilva and J.J. Hull, "Proper noun detection in document images," *Pattern Recognition*, Feb. 1994, 311-320.
13. T.K. Ho, J.J. Hull, and S.N. Srihari, "Decision combination in multiple classifier systems," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, v. 16, 1, Jan. 1994, 66-75.
14. T.K. Ho, J.J. Hull, S.N. Srihari, "A word shape analysis approach to lexicon based word recognition," *Pattern Recognition Letters*, Nov. 1992, 821-826.
15. T.K. Ho, J.J. Hull, S.N. Srihari, "A computational model for recognition of multifont word images," *Machine Vision and Applications*, vol. 5, no. 3, summer 1992, 157-168.
16. E. Cohen, J.J. Hull, and S.N. Srihari, "Understanding handwritten text in a structured environment: determining ZIP Codes from addresses," *International Journal of Pattern Recognition and*

Artificial Intelligence, Vol. 5, No. 1 & 2, 1991, 221-264.

17. D. Sher and J.J. Hull, "Quantifying the unimportance of prior probabilities in a computer vision problem," *Pattern Recognition Letters*, June, 1990, 379-383.
18. S.N. Srihari, E. Cohen, J.J. Hull, and L. Kuan, "A System to locate and recognize ZIP Codes in handwritten addresses," *International Journal of Research and Engineering: Postal Applications*, inaugural issue, 1989, pp. 37-56.
19. S.N. Srihari, C.H. Wang, P. W. Palumbo, and J.J. Hull, "Recognizing address blocks on mail pieces: Specialized tools and problem-solving architecture," *AI Magazine*, 8 (4), (Winter 1987), 25-40.
20. J. J. Hull, "Hypothesis generation in a computational model for visual word recognition" *IEEE Expert*, August, 1986, pp. 63-70. Invited to appear.
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