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## Harry Wechsler

Harry Wechsler received the Ph.D. in Computer Science from the University of California, Irvine, in 1975. From 1976 to 1978 he was Assistant Professor and System Manager for the Advanced Automation Research Laboratory (AARL) in the Department of Electrical Engineering at Purdue University, during 1978-1980 he was Assistant Professor at the University of Wisconsin, and in 1980 he became Associate Professor of Electrical Engineering at the University of Minnesota. Since 1987 he has been Professor of Computer Science at George Mason University (GMU). Dr. Wechsler has been the Director for the Distributed and Intelligent Computation Center at GMU [http://cs.gmu.edu/~wechsler/DIC\\_Center/](http://cs.gmu.edu/~wechsler/DIC_Center/) 1995 - 2010. His academic career includes visiting Professorships at Institut National de Recherche en Informatique et en Automatique (INRIA) (France), Kyoto University (Japan), Technion (Israel), the Center for Automation Research at The University of Maryland, Centre National de Recherche Scientifique (CNRS) and University of Paris-Orsay (France), Romanian Academy of Sciences (Romania), Commonwealth of Science and Industry Research Organization (CSIRO) (Australia), University of Geneva (Switzerland), Russian Academy of Science (Moscow), and the Chinese Academy of Sciences (Beijing).

Dr. Wechsler's research, in the field of intelligent systems, covers BIOMETRICS: Face Recognition, Performance Evaluation; IMAGE ANALYSIS and UNDERSTANDING: Computer Vision (CV), Automatic Target Recognition (ATR), Signal and Image Processing (SIP); MACHINE INTELLIGENCE : Pattern Recognition (PR), Statistical Learning Theory (SLT), Neural Networks (NN), Machine Learning (ML), Information Retrieval, Data Mining; EVOLUTIONARY COMPUTATION: Genetic Algorithms (GA); PERFORMANCE EVALUATION and ERROR ANALYSIS; SECURITY (spam and phishing detection); VIDEO PROCESSING and SURVEILLANCE; and HUMAN-COMPUTER INTELLIGENT INTERACTION (HCII). Research on *ATR* and *joint space/spatial-frequency image representations* has been supported by NSF and DARPA, research on *biometrics, face recognition, and homeland security* has been supported by FBI, ARPA, DOD/TSWG and ARL, research on *sensor fusion technologies for radar / ATR* has been supported by NRL / BMD, and research on *complex physical system / solar sciences* has been supported by NASA. Dr. Wechsler has designed, developed, and implemented the FERET (face) database at GMU.

Dr. Wechsler has been a consultant for both government (DOS, NIH, NRL, MIT Lincoln Lab/DARPA, NASA, and Veteran Administration) and private industry (Honeywell, Lockheed-Martin, Perkin Elmer, Procter & Gamble, SAIC, and 3M). Panelist and/or reviewer for NAS (National Academy of Sciences), NSF, UK ESPRC (Engineering and Physical Sciences Research Council), Swiss NSF, and Hong Kong National Research Foundation. He has cooperated with the MAYO Clinic on biomedical image processing and computer tomography (CT). He has lectured extensively in US and abroad, was an invited guest lecturer for several NATO Advanced Study Institutes (ASIs) and Advanced Research Workshops (ARWs) on Computer Vision, Pattern Recognition and Robotics, and has taught professional short-courses on Computer Vision, Neural Networks, and AI. He was Director for the NATO Advanced Study Institutes (ASI) on "Active Perception and Robot Vision" held in 1989, in Maratea, Italy, "Statistics and Neural Networks" held in 1993, in Les Arcs, France, and "Face Recognition: From Theory to Applications" held in 1997, in Stirling, UK. Co-Director and Lecturer for the Summer School for "Advanced Studies on Biometrics: Authentication and Recognition," held in 2003 and 2009, respectively, in Alghero, Italy.

He served as Co-Chair for the 13th International Conference on Pattern Recognition held in Vienna, Austria, in 1996. Member of the organizing committees for the 1st, 2nd, 3rd, 4th, and 8th Int. Conferences on 'Automatic Face and Gesture Recognition', held in Zurich, Switzerland, 1995, Killington, VT, 1996, Nara, Japan, 1998, Grenoble, France, 2000, and Amsterdam, Holland, 2008; 1st, 2nd, and 3rd Int. Conf. on Biometrics (Hong Kong, 2004; Seoul, Korea, 2007; Alghero, Italy, 2009). Member of the program committees for Computer Vision and Pattern Recognition (CVPR) held in Hilton Head, South Carolina, 2000, and Washington, DC, 2004; the 16th Int. Conf. on Pattern Recognition (ICPR) held in Quebec City, Canada, 2002, the 17th Int. Conf. on Pattern Recognition (ICPR) held in Cambridge, UK, 2004; the 12th and 13rd Int. Conf. on Image Analysis and Processing (ICIAP), held in Palermo, Italy, 2001, and Mantova, Italy, 2003; the 2nd, 3rd and 4th Int. Conf. on Audio- and Video-based Biometric Person Authentication, held in Washington, DC, 1999, Halmstad, Sweden, 2001, and Surrey, UK, 2003; the Recognition, Analysis and Tracking of Faces and Gestures in Real-Time Systems (RATFG-RTS'99) workshop held in conjunction with Int. Conf. on Computer Vision (ICCV) Kerkyra, Greece, 1999, the Biometric Authentication Workshops, held in conjunction with European Conf. on Computer Vision (ECCV) in Dublin, Ireland, 2000, Copenhagen, Denmark, 2002, and Prague, 2004; the Advanced Video and Signal Base Surveillance Conf. held in Miami, 2003; the Int. Conf. on Image Processing (ICIP 2003; Barcelona, Spain), and (ICIP 2004; Singapore); IEEE 1<sup>st</sup>, 2nd, and 3rd Int. Conf. on Biometrics: Theory, Applications, and Systems (BTAS), Washington, DC, 2007, 2008, and 2009; and the 3rd IEEE Int. Workshop on Analysis and Modeling of Faces and Gestures (AMFG) (held in conjunction with ICCV 2007), Rio de Janeiro, Brazil, 2007. Associate Editor (AE) and Member of the Editorial Board for Computer Vision and Image Understanding (CVIU), IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), and Pattern Recognition Letters (PRL).

Dr. Wechsler lectured in the United States (Boeing, Carnegie-Mellon, Columbia Univ., IBM/Yorktown-Heights, JPL, Microsoft Research (MSR)/Redmond, Mitsubishi Electrical Research Laboratory, Siemens (SRC), NIH, NRL, SRI, Bell Labs, Salk Institute, Hughes Research Labs, USC), Australia, Austria, Canada (U of Toronto), Croatia, Czech Republic, China (National Academy of Science and Fudan University), Denmark, France (INRIA and ENS < Ecole Normale Supérieure >), Germany (Max-Planck-Institut Tubingen and Hamburg Univ.), Greece, Hong Kong, Hungary, Israel, Italy (Politecnica di Milano), Japan (Kyoto University), Mexico, The Netherlands (University of Amsterdam), Romania, Russia, Slovenia, South Africa, Spain, Sweden, Switzerland (ETH and EPFL), and UK (Cambridge, Imperial College, London University and the Turing Institute / Glasgow).

Dr. Wechsler has authored over 280 scientific papers. Academic Press published his book "Computational Vision" in September 1990. Editor for the books, "Neural Networks for Perception" (Vol 1 & 2), published by Academic Press in November 1991, and main editor for "Face Recognition : From Theory to Applications", published by Springer-Verlag in 1998. His book on "Reliable Face Recognition Methods" was published by Springer – Verlag in 2007. He was elected **IEEE Fellow**, effective as of January 1, 1993, "for contributions to joint spatial/spectral image representations and neural networks, and their theoretical integration and application to human and machine perception". He was elected an **IAPR** (Int. Assoc. for Pattern Recognition) **Fellow** in 1998.

## SELECTED PUBLICATIONS (since 1995)

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- 7) S. Gutta, J. Phillips and H. Wechsler (1998), Gender and Ethnic Classification of Face Images, *3rd Int. Conf. on Automatic Face and Gesture Recognition*, Nara, Japan.
- 8) H. Wechsler, P. J. Phillips, V. Bruce, F. Fogelman - Soulie and T. Huang (Eds.) (1998), FACE RECOGNITION: From THEORY to APPLICATIONS , Springer - Verlag.
- 9) B. Takacs and H. Wechsler (1998), A Dynamic and Multiresolution Attention Model and Its Application to Facial Landmark Detection, *Computer Vision and Image Understanding*, Vol. **70**, No. 1, 63-73.
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- 12) C. Clausen, S. Gutta and H. Wechsler (1999), Reinforcement Algorithms Using Functional Approximation, *16th Int. Joint Conf. on Artificial Intelligence (IJCAI)*, Stockholm, Sweden.
- 13) J. Huang and H. Wechsler (1999), Eye Detection Using Optimal Wavelet Packets and Radial Basis Functions (RBFs), *Int. Journal of Pattern Recognition and Artificial Intelligence*, Vol. **13**, No. 7, 1009-1025.
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- 16) J. Huang and H. Wechsler (2000), Visual Routines for Eye Location Using Learning and Evolution, *IEEE Trans. on Evolutionary Computation*, Vol. **4**, No. 1, 73-82.

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- 18) A. Pujol, J. J. Villanueva, and H. Wechsler (2000), Automatic View Based Caricaturing and Face Recognition, *15th Int. Conf. on Pattern Recognition (ICPR)*, Barcelona, Spain.
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- 20) C. Clausen and H. Wechsler (2000), Quad-Q Learning, *IEEE Trans. on Neural Networks*, Vol. **11**, No. 2, 279-294.
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- 63) H. Lai, V. Ramanathan, and H. Wechsler (2008), Reliable Recognition of Occluded and Disguised Faces Using Adaptive and Robust Correlation Filters, *Computer Vision and Image Understanding*, Vol. **111**, No. 3, 329-350.
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- 76) H. Wechsler (2010), Intelligent Biometric Information Management, *J. of Intelligent Information Management*, Vol. **2**, 499 – 511.
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## PATENTS

1. Fractal Image Compression Using Quad-Q-Learning (with Clifford Claussen) (# 6,775,415 B1 awarded on 08/10/04) (licensed in 2006 by *Intellectual Ventures* / Nathan Myhrvold, CEO/).
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4. Data Stream Change Detector (with Shen - Shyang Ho) (#60/865,465 provisionally filed on 11/13/06 and # 11/ 938,895 formally submitted on 11/13/07)
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8. Face Authentication Using Recognition-by-Parts, Boosting, and Transduction (#61/183,105 provisionally filed on 06/02/2009 with Fayin Li and # 12 / 791, 162 formally submitted on 6/01/2010).