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Education

Ph.D. in Computer Science, University of Illinois at Urbana-Champaign, Jan. 1989. Co-Advisors: Thomas S. Huang (member of the National Academy of Engineering, NAE) and Narendra Ahuja.

M.S. in Computer Science, University of Illinois at Urbana-Champaign, May, 1985. Advisor: Narendra Ahuja.

B.S. in Computer Science, Fudan University, Jan. 1982

Professional Experience

Professor (7/2003 – present) *Associate Professor* (7/1998 – 6/2003) *Assistant Professor* (8/1992 – 6/1998) Department of Computer Science and Engineering, Michigan State University, East Lansing, MI USA

Visiting Professor (3/2004 - present), Fudan University, Shanghai, China

Visiting Professor (8/2006 - 5/2007) The Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, Cambridge, MA USA. Host: Prof. Mriganka Sur

Visiting Associate Professor (8/1999 - 12/1999), The Media Laboratory, Massachusetts Institute of Technology, Cambridge, MA USA. Host: Prof. Alex Pentland

Visiting Assistant Research Professor (10/1990 – 8/1992), Beckman Institute, University of Illinois, Urbana, IL USA

Researcher (1/1989 – 9/1990), Computer Research Institute of Montreal (CRIM), Montreal, Canada and Ecole Polytechnique, University of Montreal, Montreal, Canada

Research assistant (8/1984 – 12/1988), Coordinate Science Laboratory, University of Illinois, Urbana, IL USA

Research Interests

Brain models for vision, audition, touch, cognition, behaviors, and motivation, all real time. Since the work of Cresceptron (IJCNN 1992, ICCV 1993, and IJCV 1997), an early attempt for a biologically inspired deep-learning system for robots to learn object recognition, object detection, object segmentation directly from images of cluttered scenes, I have been interested in biological mechanisms for the brain to analyze real-living sensory and motor

streams, especially the autonomous development of a variety of capabilities by robots and animals through experience, including feature extraction and feature binding from high-dimensional data streams, perception, cognition, behaviors, motivation, and abstract reasoning skills through high-dimensional natural and artificial data streams. All the algorithms we developed are meant for real-time operation (i.e., autonomous development). Attention, both bottom-up attention and top-down attention in a unified scheme, for actions in real-world cluttered world is a major mechanism that the brain uses and is one of my major interests and unique strengths. I have published over 300 research articles on related subjects, including feature extraction and binding, high-dimensional data attention, task muddiness, intelligence metrics, mental architectures, vision, audition, natural language understanding, touch, detection, recognition, autonomous navigation and other emergent behaviors. My research has been supported by NSF, DARPA, ONR, Siemens Corporate Research, Microsoft Research, SAIC, Zyvex, AVS, GM, and Toyota.

Multidisciplinary and International Background

Weng is a faculty member of MSU Cognitive Science Program and MSU Neuroscience Program. Since 1991, he has been studying psychology and neuroscience, working with psychologists and neuroscientists. He spent 2006-2007 academic year on sabbatical at the Department of Brain and Cognitive Sciences at MIT, hosted by neuroscientist Prof. Mriganka Sur. In Spring 2007, he taught a graduate course titled *Computational Cognitive and Neural Development*, crossed listed as BCS9.915 and EECS6.887 at MIT. Weng has been a visiting professor at Fudan University 2003-2014.

Professional Activities, Service and Awards

- *IEEE Fellow* since January 2009

- *Founder and Editor-in-Chief:*

    - International Journal of Humanoid Robotics, World Scientific, with Ming Xie and Jean-Guy Fontaine, 2003 – present.
    - Brain-Mind Magazine, http://www.brain-mind-magazine.org/, 2012 - present.

- *Founder and President*:

    - Brain-Mind Institute, East Lansing, MI, a nonprofit startup, 2012 - present. http://www.brain-mind-institute.org/

- *Founder and Chairman:*

    - Autonomous Mental Development Technical Committee, IEEE Computational Intelligence Society, Feb. 2004 – Feb. 2006.

- *Founder and Production Supervision*:

    - *AMD Newsletter*, published by the IEEE CIS AMD Technical Committee, 2004 - present. http://www.cse.msu.edu/amdtc/amdnl/

- *Chairman*:

    - Education Committee, International Neural Network Society (INNS); 2010.
    - Governing Board of International Conferences on Development and Learning, Feb. 2005 - Feb. 2008.

    – Finance Committee, the International Neural Network Society, August 2007 - Dec. 2008.

- *Board Member*: Executive Board of the International Neural Network Society, Feb. 2006 - Dec. 2008.

- *Associate Editor:*

  – IEEE Transactions on Autonomous Mental Development, 2008 – present.

  – IEEE Transactions on Pattern Analysis and Machine Intelligence, 2001 – 2004.

  – IEEE Transactions on Image Processing, 1994 – 1997.

- *Guest Editor:*

  – The Special Issue on Brain Imaging-informed Multimodal Analysis, *IEEE Transactions on Autonomous Mental Development*, (co-edited with Junwei Han of Northwestern Polytechnical University, Tianming Liu of University of Georgia, Christine Cong Guo of QIMR Berghofer, and Deniz Erdogmus of Northeastern University.) The deadline was Oct. 10, 2014, to appear in April 2015.

  – The Special Issue on Computational Modeling of Neural and Brain Development, *IEEE Transactions on Autonomous Mental Development*, (co-edited with Yaochu Jin of University of Surrey, Yan Meng of Stevens Institute of Technology, and Nik Kasabov of Auckland University of Technology.) The issue appeared Dec. 2011.

  – The Special Issue on Autonomous Mental Development, *IEEE Transactions on Evolutionary Computation*, editorial work 2004-2006 (co-edited with Jay McClelland of Stanford University and Kim Plunkett of Oxford University). The issue appeared April 2007.

  – The Special Issue on Autonomous Mental Development, *International journal of Humanoid Robotics*, editorial work 2005-2007 (co-edited with Brian Scassellati of Yale University and Zhengyou Zhang of Microsoft Research, Redmond). The issue appeared in June 2007.

- *General Chair*:

  – International Conference on Brain-Mind, Beijing, July 12-13, 2014.
  http://www.brain-mind-institute.org/program-summer-2014.html

  – Brain-Mind Workshop, Fudan University, Shanghai, China, December 21-22, 2013.
  http://www.brain-mind-workshop.org/programs-2013.html

  – International Conference on Brain-Mind, East Lansing, July 14-15, 2013.
  http://www.brain-mind-institute.org/program-summer-2013.html

  – Brain-Mind Workshop, Fudan University, Shanghai, China, December 15 - 16, 2012.
  http://www.brain-mind-workshop.org/programs-2012.html

  – International Conference on Brain-Mind, East Lansing, July 14-15, 2012.
  http://www.brain-mind-institute.org/program-summer-2012.html

  – Brain-Mind Workshop, Fudan University, Shanghai, China, December 19 - 20, 2011.
  http://www.brain-mind-workshop.org/programs-2011.html

  – IEEE 8th International Conference on Development and Learning, Shanghai, China, June 5-7, 2009
  http://jkx.fudan.edu.cn/~icdl2009/

  – INNS New Directions in Neural Networks Symposia (NNN 2008), Auckland, New Zealand, Nov. 24-25, 2008

- – IEEE 7th International Conference on Development and Learning, Monterey, CA, August 9-12, 2008 (chaired with Jay McClelland of Stanford University)
http://www.cse.msu.edu/ei/icdl08/

- *Program Chair*:

  - – 2nd International Conference on Development and Learning (ICDL'02), MIT, Cambridge, MA, June 13-15, 2002 (chaired with Jeff Elman of UCSD and Mriganka Sur of MIT)
  - – NSF/DARPA Workshop on Development and Learning (WDL), Michigan State University, East Lansing, MI, April 5-7, 2000 (chaired with Ida Stockman of MSU).

- *Invited participant*, UK Foresight Program, Cognitive Systems Project, 2003.

- *Member of review panels*, NSF Learning Centers Program (one of the five panelists in the final panel of the three rounds of review panels,), NSF review panels of the Robotics and Machine Intelligence Program, the Interactive Systems Program, the SBIR/STTR Program, the Graduate Fellowship Program, the CISE Research Instrumentation Grants Program

- *Member of project review panel*, European Commission, Cognitive Systems, Interaction, Robotics Program, the three-person project review panel of EC FP7 Italk project 2009; European Commission FP7 evaluator panel.

- *Panel Organizer*:

  - – Panel on "Brain-Mind Architectures: Module-Free, General Purpose and Immediate Learning", International Joint Conference on Neural Networks, San Jose, California, July 31 - August 5, 2011 (co-organized with Asim Roy of Arizona State University)
  - – Panel on "Between Bottom-Up and Top-Down What Is the Much in-between?" International Joint Conference on Neural Networks, Barcelona, Spain, July 21, 2010 (co-organized with Asim Roy of Arizona State University)
  - – Panel on Autonomous Mental Development, International Conference on Development and Learning, June 14, 2002

- *Special Session Organizer*:

  - – Special session on Brain-Mind Architectures and Learning Mechanisms, International Joint Conference on Neural Networks, San Jose, California, July 31 - August 5, 2011(co-organized with Asim Roy of Arizona State University)
  - – Special session on Mental Architecture and Representation, International Joint Conference on Neural Networks, Barcelona, Spain, July 20, 2010 (co-organized with Asim Roy of Arizona State University)
  - – Special session on Autonomous Mental Development, IEEE/INNS International Joint Conference on Neural Networks, Orlando, Florida, August 12-17, 2007.
  - – Special Invited Session on Autonomous Mental Development, World Congress on Computational Intelligence (WCCI 2006), Vancouver, BC Canada, July 16-21, 2006 (co-organized with Brian Scassellati of Yale University)
  - – Special Session on Perceptual Processing Systems and Their Development, The 5th International Conference on Development and Learning (ICDL'06), Bloomington, IN, USA, May 31 - June 3, 2006 (co-organized with Zhengyou Zhang of Microsoft Research, Redmond)

- – Special Invited Session on Autonomous Mental Development, International Joint Conference on Neural Networks, Portland Oregon, July 20-24, 2003 (co-organized with Olaf Sprons of Indiana University)

- *Withrow Distinguished Scholar Award*, College of Engineering, MSU, 1998.

- Biography listed in *Who's Who in Science and Engineering*, *Who's Who in America*, and *Who's Who in the World*.

- *International Advisory Committee member*:

  - – The Second International Conference of Intelligent Robotics and Applications, Singapore, Dec. 16 - 18, 2009.

- *Program Committee Member*:

  - – The 2013 IEEE Symposium on Artificial Life, Singapore, April 15 19, 2013
  - – IEEE 10th International Conference on Development and Learning, and on Epigenetic Robotics (ICDL-EpiRob), Frankfurt, Germany, August 24-27, 2011.
  - – International Joint Conference on Neural Networks, San Jose, CA, July 31 - August 4, 2011.
  - – International Joint Conference on Neural Networks, Barcelona, Spain, July 18-23, 2010.
  - – International Conference on Computer Vision Theory and Applications, Angers, France, May 17-21, 2010.
  - – The 2nd International Conference on BioMedical Engineering and Informatics Tianjin, China, Oct. 17-19, 2009.
  - – IEEE Symposium on Artificial Life (ALife 2009), Nashville, TN, USA, March 30 April 2, 2009.
  - – International Joint Conference on Neural Networks, Orlando, Florida, USA, August 12 - August 17, 2007. Also a member of the Organizing Committee and the Chair of Special Sessions.
  - – International Conference on Development and Learning 2007. Also a member of the Organizing Committee.
  - – IEEE International Conference on Systems, Man, and Cybernetics (SMC 2006), Oct. 8 - Oct. 11, 2006.
  - – International Conference on Development and Learning, Bloomington, IN, May 31 - June 3, 2006. Also a member of the Organizing Committee.
  - – IEEE International Conference on Systems, Man, and Cybernetics (SMC 2005), Hawaii, October 2005.
  - – Developmental Robotics Symposium, 2005 AAAI Spring Symposiums, Stanford University, Stanford, CA, March 21-23, 2005.
  - – IEEE International Joint Conference on Neural Networks, Budapest, Hungary, July 25-29, 2004.
  - – Workshop on Statistical Learning in Computer Vision, Prague, Czech Republic, May, 15, 2004.
  - – Asian Conference of Computer Vision, Jeju Island, Korea, January 28 - 30, 2004.
  - – IEEE International Symposium on Computational Intelligence in Robotics and Automation, Monterey, CA, Nov. 8-9, 1999.
  - – The 2nd International Conference on Audio- and Video-based Biometric Person Authentication, Washington, DC, March 22-24, 1999.
  - – IEEE Conf. Computer Vision and Pattern Recognition, Santa Barbara, CA, June 1998.
  - – IEEE International Conf. Image Processing, Chicago, IL Oct. 4-7, 1998.

- – IEEE 3rd International Conference on Automatic Face- and Gesture-Recognition, Nara, Japan, April 14-16, 1998.

- – IEEE Conf. Computer Vision and Pattern Recognition, Puerto Rico, June 17-19, 1997.

- – IEEE 2nd International Conference on Automatic Face- and Gesture-Recognition, Killington, Vermont, Oct. 14-16, 1996.

- – IEEE International Symposium on Computer Vision, Coral Gables, Florida, November 20-22, 1995.

- – International Conference on Neural Networks and Signal Processing, Nanjing, China, Dec. 1995.

- – IEEE 1st International Conference on Image Processing, Austin, Texas, Nov. 1994.

- – 12th International Conference on Pattern Recognition, Jerusalem, Israel, Oct. 1994.

- – International Symposium of Young Investigators on Information, Computer and Control, Beijing, China, Feb. 1994.

- *Outstanding Mentor Award*, MSU Ronald E. McNair Post-Baccalaureate Achievement Program, 1997.

- *NSF Research Initiation Award*, 1994.

- *Sigma Xi Outstanding Student Research Paper Award*, University of Illinois, 1987.

- *Member*, IEEE Computational Intelligence Society, Society for Neuroscience, IEEE Computer Society, International Neural Network Society, Association for Computing Machinery, American Association for Artificial Intelligence, American Association for the Advancement of Science, American Society for Engineering Education, and Phi Beta Delta Honor Society for International Scholars.

Popular Press Articles Written by News Reporters

1. 01/25/01 (BBC, UK). "Time for Real Intelligence?" by Ivan Noble at BBC, UK. An electronic version available at

   `http://news.bbc.co.uk/hi/english/sci/tech/newsid_1136000/1136870.stm`

2. 01/26/01 (UPI, USA). "Robot Learns Like a Child" by Jean Lawrence at United Press International. An electronic version available at

   `http://www.newsmax.com/archives/articles/2001/1/25/195307.shtml`

3. 03/01/01 (TP, Singapore). "Bring On the Intelligent Robot" by Steven Lewis at Times Publishing Limited, Singapore. An electronic version available at

   `http://www.tpl.com.sg/timesnet/data/ab/docs/ab2757.html`

4. 08/01 (Enel, Italy). "La mente del robot (The Mind of Robot)" by Michela Bertolani at Boiler Magazine, Italy. An electronic version available at

   `http://www.enel.it/it/enel/magazine/boiler/boiler26/html/articoli`
   `/Bertolani-Intelligenza.asp`

5. 08/16/01 (KRN, US). "Like a Child, 'Smart' Robot Learns Gradually" by Robert S. Boyd at Knight Ridder Newspapers. This article appeared in about 30 US newspapers, including *Detroit Free Press* (08/17/01) and *Philadelphia Inquirer* (08/23/01). An electronic version available at

   `http://www.freep.com/money/tech/robot17_20010817.htm`

6. Winter, 2002 (Exploratorium Magazine, US). "Bringing up Baby" by Erica Klarreich. *Exploratorium Magazine*, vol. 25, No 4, Winter 2001/2002, pp. 18-20. An electronic version is available at

   `http://www.cse.msu.edu/~weng/media/Exploratorium/Exploratorium.pdf`

7. 02/23/2003 (Lansing State Journal) "Dav, A Robotic Soldier, or Just Maybe a Maid," by Sharon Terlep at Lansing State Journal. An electronic version is available at

   `http://www.lsj.com/news/campus/p_030223_research_robot_8a.html`

8. 06/09/2003 (Detroit Free Press) "Possibilities Limitless for MSU's Thinking Robots" by Mike Wendland at Detroit Free Press. An electronic version is available at

   `http://www.cse.msu.edu/~weng/media/FreePress2003-6-9.pdf`

9. 06/18/2003 (Technology Review) "Teachable Robots" by Rebecca Zacks at Technology Review, July/August issue, 2003. An electronic version is available at

   `http://www.cse.msu.edu/~weng/media/TechReviewJuly2003.pdf`

10. 09/10/2003 (Discovery Channel) Filming SAIL and Dav robot projects for Discovery Channel Technowledge Series. Aired on the Discovery Channel 2003 and 2004. Producer and Director: Matt Borten.

11. 11/5-11/2005: (New Scientist) "Brain Box," by Douglas Fox, a cover story reporting the biologically inspired Darwin and SAIL robots.

Publications

Books

1. J. Weng, *Natural and Artificial Intelligence: Introduction to Computational Brain-Mind*, BMI Press, pp. 445, 2012.

2. J. Weng, T. S. Huang, and N. Ahuja, *Motion and Structure from Image Sequences*, Springer-Verlag, 1993.

Article in Refereed Journals, Published or Accepted

3. J. Weng, "Brain as an Emergent Finite Automaton: A Theory and Three Theorems." *International Journal of Intelligence Science,* 5, 112-131. doi: 10.4236/ijis.2015.52011.

4. J. Weng and Matthew D. Luciw, "Brain-Inspired Concept Networks: Learning Concepts from Cluttered Scenes," *IEEE Intelligent Systems Magazine*, vol. 29, no. 6, pp. 14-22, 2014.

5. J. Weng, M. D. Luciw and Q. Zhang, "Brain-Like Emergent Temporal Processing: Emergent Open States," *IEEE transactions on Autonomous Mental Development*, vol. 5, no. 2, pp. 89 - 116, 2013.

6. J. Weng, S. Paslaski, J. Daly, C. VanDam and J. Brown, " Modulation for Emergent Networks: Serotonin and Dopamine," *Neural Networks,* vol. 41, pp. 225-239, 2013.

7. M. Solgi, T. Liu and J. Weng, "A Computational Developmental Model for Specificity and Transfer in Perceptual Learning," *Journal of Vision,* vol. 13, no. 1, ar. 7, pp. 1-23, 2013.

8. J. Weng and M. Luciw, "Brain-Like Emergent Spatial Processing," *IEEE transactions on Autonomous Mental Development*, vol. 4, no. 2, pp. 161-185, 2012.

9. J.Weng, "Symbolic Models and Emergent Models: A Review," *IEEE Transactions on Autonomous Mental Development*, vol. 4., no. 1, pp. 29-53, 2012.

10. J. Weng," Why Have We Passed 'Neural Networks Do Not Abstract Well'?", *Natural Intelligence: the INNS Magazine*, vol. 1, no.1, pp. 13-22, 2011.

11. Z. Ji, M. Luciw, J. Weng, and S. Zeng, "Incremental online object learning in a vehicular radar-vision fusion framework," *IEEE Transactions on Intelligent Transportation Systems*, vol. 12, no. 2, pp. 402-411, 2011.

12. M. Luciw and J. Weng, "Top-Down Connections in Self-Organizing Hebbian Networks: Topographic Class Grouping," *IEEE Transactions on Autonomous Mental Development*, vol. 2, no. 3, pp. 248-. 261, September, 2010.

13. Y. Zhang and J. Weng, "Spatiotemporal Multimodal Developmental Learning," *IEEE Transactions on Autonomous Mental Development*, vol. 2, no. 3, pp. 149-166, 2010.

14. M. Solgi and J. Weng, "Developmental Stereo: Emergence of Disparity Preference in Models of Visual Cortex," *IEEE Transactions on Autonomous Mental Development*, vol. 1, no. 4, pp. 238-252, 2009.

15. J. Weng and M. Luciw, "Dually Optimal Neuronal Layers: Lobe Component Analysis," *IEEE Transactions on Autonomous Mental Development*, vol. 1, no. 1, pp. 68-85, 2009.

16. D. Chen, L. Zhang and J. Weng, Spatio-temporal Adaptation in the Unsupervised Development of Networked Visual Neurons, *IEEE Transactions on Neural Networks*, vol. 20, no. 6, pp. 992-1008, 2009.

17. J. Weng, "Task Muddiness, Intelligence Metrics and the Necessity of Autonomous Mental Development," *Minds and Machines*, vol. 19, pp. 93-115, 2009.

18. J. Weng, T. Luwang, H. Lu, X. and Xue, "Multilayer In-place Learning Networks for Modeling Functional Layers in the Laminar Cortex," *Neural Networks,* vol. 21, no.2-3, pp. 150-159, 2008.

19. J. Weng, T. Luwang, H. Lu, and X. Xue, "A Multilayer In-Place Learning Network for Development of General Invariances," *International Journal of Humanoid Robotics,* vol. 4, no. 2, pp. 281-320, 2007.

20. S. Zeng and J. Weng, "Online-learning and attention-based approach to obstacle avoidance using a range finder," *Journal of Intelligent and Robotic Systems*, vol. 50, no. 3, pp. 219-239, 2007.

21. X. Huang and J. Weng, "Inherent Value Systems for Autonomous Mental Development," *International Journal of Humanoid Robotics,* vol. 4, no. 2, pp. 407-433, 2007.

22. Y. Zhang and J. Weng, "Task Transfer by a Developmental Robot," *IEEE Transactions on Evolutionary Computation*, vol. 11, no. 2, pp. 226-248, 2007.

23. J. Weng and W. Hwang, "Incremental Hierarchical Discriminant Regression," *IEEE Transactions on Neural Networks*, vol. 18, no. 2, pp. 397-415, 2007

24. J. Weng, "On Developmental Mental Architectures," *Neurocomputing*, vol. 70, no. 13-15, pp. 2303-2323, 2007.

25. J. Weng and W. Hwang, "From Neural Networks to the Brain: Autonomous Mental Development," *IEEE Computational Intelligence Magazine,* vol. 1, no. 3, pp. 15-31, 2006.

26. P. K. Mckinley, B. H. C. Cheng, and J. Weng, "Integrating Multimedia Technology into the Undergraduate Curriculum," *International Journal of Engineering Education*, vol. 22, no. 4, pp. 829-838, 2006.

27. G. Abramovich, J. Weng and D. Dutta, "Adaptive Part Inspection through Developmental Vision," *ASME Transactions, Journal of Manufacturing Science and Engineering*, vol. 127, no. 4, pp. 846-856, Nov. 2005.

28. J. Weng and S. Zeng, "A Theory of Developmental Mental Architecture and The Dav Architecture Design," *International Journal of Humanoid Robotics*, vol. 2, no. 2, pp. 145-179, 2005.

29. Y. Zhang, J. Weng and W. Hwang, "Auditory Learning: A Developmental Method," *IEEE Transactions on Neural Networks*, vol. 16, no. 3, pp. 601-616, 2005.

30. J. Weng, "Developmental Robotics: Theory and Experiments," *International Journal of Humanoid Robotics*, vol. 1, no. 2, pp. 199-235, 2004.

31. J. Weng, "Autonomous mental development: A new frontier for computational intelligence," *IEEE Connections: The Newsletter of the IEEE Neural Networks Society*, (invited feature article) vol. 1, no. 4, pp. 8 - 13, 2003.

32. A. Joshi and J. Weng, "Autonomous mental development in high dimensional context and action spaces," *Neural Networks,* vol. 16, no. 5-6, pp. 701-710, 2003.

33. J. Weng, Y. Zhang and W. Hwang, "Candid Covariance-free Incremental Principal Component Analysis," *IEEE Trans. Pattern Analysis and Machine Intelligence,* vol. 25, no. 8, pp. 1034-1040, 2003.

34. J. Weng and W. Hwang, "Online Image Classification Using IHDR," *International Journal on Document Analysis and Recognition*, vol. 5, no. 2-3, pp. 118-125, 2003.

35. J. Weng and I. Stockman, "Autonomous Mental Development: Workshop on Development and Learning," *AI Magazine*, vol. 23, no. 2, pp. 95-98, 2002.

36. J. Weng, W. Hwang and Y. Zhang, "SAIL: A 'Mentally' Developing Robot," **invited article**, *Robotics and Machine Perception,* (SPIE International Technical Group Newsletter), vol. 11, no. 1, pp. 1 and 9, Feb. 2002.

37. C. Yang and J. Weng, "Visual Motion Based Behavior Learning Using Hierarchical Discriminant Regression," *Pattern Recognition Letters*, vol. 23, no. 8, pp. 1031-1038, 2002.

38. J. Weng, J. McClelland, A. Pentland, O. Sporns, I. Stockman, M. Sur and E. Thelen, "Autonomous Mental Development by Robots and Animals," **Science**, vol. 291, no. 5504, pp. 599-600, Jan. 26, 2001.

39. J. Weng and K. Y. Guentchev, "3-D Sound Localization from a Compact Noncolpanar Array of Microphones Using Tree-Based Learning," *Journal of the Acoustical Society of America*, vol. 110, no. 1, pp. 310 - 323, July 2001.

40. W. S. Hwang and J. Weng, "Hierarchical Discriminant Regression," *IEEE Trans. Pattern Analysis and Machine Intelligence*, vol. 22, no. 11, pp. 1277 - 1293, Nov. 2000.

41. S. Chen and J. Weng, "State-Based SHOSLIF for Indoor Visual Navigation," *IEEE Trans. Neural Networks*, vol. 11, no. 6, pp. 1300 - 1314, Nov. 2000.

42. J. Weng and S. Chen, "Visual Learning with Navigation as an Example," *IEEE Intelligent Systems*, vol. 15, no. 5, pp. 63-71, 2000.

43. Y. Cui and J. Weng, "Appearance-Based Hand Sign Recognition from Intensity Image Sequences," *Computer Vision and Image Understanding*, vol. 78, pp. 157-176, 2000.

44. Y. Cui and J. Weng, "A Learning-based prediction-and-verification segmentation scheme for hand sign image sequences," *IEEE Trans. Pattern Analysis and Machine Intelligence,* vol. 21, no. 8, pp. 798-804, August 1999.

45. D. L. Swets and J. Weng, "Hierarchical discriminant analysis for image retrieval," *IEEE Trans. Pattern Analysis and Machine Intelligence,* vol. 21, no. 5, pp. 386 - 401, May 1999.

46. J. Weng and S. Y. Chen, "Vision-guided navigation using SHOSLIF," *Neural Networks*, vol. 11, pp. 1511-1529, 1998.

47. D. L. Swets, Y. Pathak and J. Weng, "An Image Database System with Support for Traditional Alphanumeric Queries and Content-Based Queries by Example," *Multimedia Tools and Applications*, vol. 7, no. 3, pp. 181-212, Nov. 1998.

48. J. Weng, Y. Cui and N. Ahuja, "Transitory image sequences, asymptotic properties, and estimation of motion and structure," *IEEE Trans. Pattern Analysis and Machine Intelligence*, vol. 19, no. 5, pp. 451-464, 1997.

49. C. Dorai, J. Weng and A. Jain, "Optimal registration of object views using range data," *IEEE Trans. Pattern Analysis and Machine Intelligence*, vol. 19, no. 10, pp. 1131- 1138, 1997.

50. J. Weng, N. Ahuja and T. S. Huang, "Learning recognition and segmentation using the Cresceptron," *International Journal of Computer Vision*, vol. 25, no. 2, pp. 105-139, Nov. 1997.

51. J. Weng, A. Singh and M. Y. Chiu, "Learning-Based Ventricle Detection from Cardiac MR and CT Images," *IEEE Trans. on Medical Imaging.* vol. 16, no. 4, pp. 378-391, Aug. 1997.

52. D. L. Swets and J. Weng, "Using discriminant eigenfeatures for image retrieval," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 18, no. 8, pp. 831-836, Aug. 1996.

53. Y. Cui, J. Weng and H. Reynolds, "Estimation of ellipse parameters using optimal minimum variance estimator," *Pattern Recognition Letters*, vol. 17, pp. 309-316, March 1996.

54. J. Weng and T. S. Huang, "Performance of computer vision algorithms," *Computer Vision, Graphics, and Image Processing: Image Understanding*, vol. 60, no. 2, pp. 253-256, Sept. 1994.

55. N. Cui, J. Weng and P. Cohen, "Extended structure and motion analysis from monocular image sequences," *Computer Vision, Graphics, and Image Processing: Image Understanding*, vol. 59, no. 2, pp. 154-170, March 1994.

56. J. Weng, "Image matching using the windowed Fourier phase," *International Journal of Computer Vision*, vol. 11, no. 3, pp. 211-236, 1993.

57. J. Weng, N. Ahuja, and T. S. Huang, "Optimal motion and structure estimation," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 15, no. 9, pp. 864-884, Sept. 1993.

58. J. Weng, "Windowed Fourier phase: completeness and signal reconstruction," *IEEE Transactions on Signal Processing*, vol. 41. no. 2, pp. 657-666, Feb. 1993.

59. J. Weng, P. Cohen and M. Herniou, "Camera calibration with distortion models and accuracy evaluation," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 14, no. 10. pp. 965-980, Oct. 1992.

60. J. Weng, N. Ahuja, and T. S. Huang, "Matching two perspective views," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 14, no. 8. pp. 806-825, Aug. 1992.

61. J. Weng, P. Cohen and N. Rebibo, "Motion and structure estimation from stereo image sequences," *IEEE Transactions on Robotics and Automation*, vol. 8, no. 3, pp. 362-382, June. 1992.

62. J. Weng, T. S. Huang, and N. Ahuja, "Motion and structure from line correspondences: closed-form solution, uniqueness, and optimization," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 14, no. 3, pp. 318-336, March 1992.

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Patents

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1. J. Weng, "Spatil and Temporal Processing in Biological Brains: Architecture, Representations, Adaptation, and Motivation,", Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China, August 12, 2014.

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4. J. Weng, "Big Data: Traps, Challenges, and Opportunities,' Workshop on Big Data," International Joint Conference on Neural Networks, Beijing, China, July 7, 2014.

5. J. Weng, "The Finite Automata (FA) Class is General Purpose and How an FA Emerges from Learning," Institute of Automation, Shengyang, China, May 12, 2014.

6. J. Weng, "The Finite Automata Class is General Purpose and How an FA Emerges from Learning," Institute of Artificial Intelligence and Robotics, Xi'An Jiaotong University, Xi'An, China, May 6, 2014.

7. J. Weng, "The Finite Automata Class is General Purpose and How a General-Purpose FA Emerges from Learning," College of Automation, Northwestern Polytechnical University, Xi'An, China, May 5, 2014.

8. J. Weng, "How Brain-Mind Works with Vision but beyond: Introduction to a Whole-Brain Theory," Brain-Mind Workshop, Fudan University, Shanghai, China, Dec. 21-22, 2013.

9. J. Weng, "A Developmental Theory and Computational Model for Human Whole-Brains," *Workshop on Brain-Cognition Based Strategy for the Development of Information Science*, Department of Basic Research, Chinese Ministry of Science and Technology, Beijing. Dec. 1, 2013.

10. J. Weng, "Obama's BRAIN Initiative, Opportunities, and Resistance from Status Quo, Special Session on Mind, Brain, and Cognitive Algorithms (two panel embers, the other is Terry Sejnowski), Dallas, TX, August 7, 2013.

11. J. Weng, "Obama's BRAIN Initiative and Multidisciplinary Education," Panel on Teaching Cognitive Science and Computational Intelligence, Dallas, TX, August 6, 2013.

12. J. Weng, "Cognitive Robotics: A Brain-Mind Theory and Experiments," NSF Workshop on Cognitive Science, International Joint Conference on Neural Networks, August 6, 2013.

13. J. Weng, "Emotion in Brain-Inspired Developmental Networks," Panel on Higher Emotion, International Joint Conference on Neural Networks, Dallas, TX, August 5, 2013.

14. J. Weng, "Obama's BRAIN Initiative and Resistance from the Status Quo," International Conference on Brain-Mind, East Lansing, Michigan, USA, July 27-28, 2013.

15. J. Weng, "A Theory on the Completeness of the DN Logic Capability," International Conference on Brain-Mind, July 14, East Lansing, Michigan, USA, 2012.

16. J. Weng, "Can Natural Intelligence and Artificial Intelligence Be Unified?," Brain-Mind Workshop, Fudan University, Shanghai, China, Dec. 15-16, 2012.

17. J. Weng, "Why Understanding Brain-Mind Requires 6-Discipline Knowledge," International Conference on Brain-Mind, July 14, East Lansing, Michigan, USA, 2012.

18. J. Weng, "Understanding the (5+1)-Chunk Brain-Mind Model Requires 6-Discipline Knowledge," Brain-Mind Workshop, Dec. 19 - Dec. 20, 2011, Fudan University, Shanghai, China, presented Dec. 19-20, 2011.

19. J. Weng, "Science Should Expand Its Horizon: Suggestions to the US and Chinese Governments," NSF Workshop on US-China Collaborations, Arlington VA, May 23-24, 2011, presented Dec. 24, 2011.

20. J. Weng, "A 5-Chunk Brain-Mind Network Model for Multiple Events in Complex Backgrounds," Keynote Speaker, *Decades of the Mind VI*, Singapore, Oct. 18-20, 2010.

21. J. Weng, "General-Purpose Developmental Robots," Fudan University, June 24, 2010.

22. J. Weng, "Spatiotemporal Processing in the Brain: Attention, Recognition and Abstraction," Dong Hua University, Shanghai, China, Dec. 22, 2009.

23. J. Weng, "Robotic Developmental Vision," Forum of Autonomous Robots, Dalian, China, Sept. 3, 2009.

24. J. Weng, "Spatiotemporal Processing in the Brain: Attention, Recognition and Abstraction," Nanjing University of Science and Technology, China, May 22, 2009.

25. J. Weng, "Autonomous Mental Development: Modeling Brain's Spatial and Temporal Processing," INNS New directions in Neural Networks Symposia (NNN 2008), Auckland, New Zealand, Nov. 24-25, 2008.

26. J. Weng, "Research Environment," College of Computer Science and Engineering Establishment Ceremony Speech, Fudan University, May 27, 2008.

27. J. Weng, "Modeling Abstraction in Cerebral Cortex," Shengyang Institute of Automation, Shengyang, July 14, 2008.

28. J. Weng, "Epigenetic Development: Generating Internal Representations through Interactions with the Real-World Environments," Microsoft Research, Aug. 20, 2007.

29. J. Weng, "Brain-Inspired Autonomous Mental Development," Qingdao University, Jinan, China, July 19, 2007.

30. J. Weng, "Brain-Inspired Autonomous Mental Development," Shandong University, Jinan, China, July 17, 2007.

31. J. Weng, "Biologically Inspired Multilayer In-Place Learning Networks for Autonomous Skill Development," Shengyang Institute of Automation, Shengyang, July 6, 2007.

32. J. Weng, "Biologically Inspired Autonomous Skill Development through Human Machine Interactions,"' Panel Session, HCI for Multimedia Communications, International Conference on Multimedia and Expo., Beijing, China, July 5, 2007.

33. J. Weng, "Biologically Inspired Multilayer In-Place Learning Networks for Autonomous Skill Development ," Changsha University of Science and Technology, Changsha, China, July 3, 2007.

34. J. Weng, "Developmental Robot Brains: Time for Commercialization?" General Motors New Robotics Symposium, May 18, 2007.

35. J. Weng, "Developmental Object Learning Using Video and Radar for a Driver Assistance System," General Motors, Research and Development, April 16, 2007.

36. J. Weng, "Mental architectures for Human Computer Interactions", International Conference on Multimedia and Expo., Beijing, July 2-5, 2007.

37. J. Weng, "Driver Safety and New Robotics Technology," Automotive Institute, Tongji University, Shanghai, March 19, 2007.

38. J. Weng, "Computational Cognitive and Neural Development," Fudan International Symposium on Brain, Cognition, and Computation, Fudan University, Shanghai, March 17 - 18, 2007.

39. J. Weng, "Brain-Inspired Autonomous Mental Development and Computational Mental Models," Department of Electrical and Computer Engineering, Boston University, Department Colloquium, Nov. 6, 2006.

40. J. Weng, "Modeling Cortical Neurons as Lobe Components: Emergence of Receptive Fields, Orientations and More from Natural Images," Annual Meeting of the Charles Rivers Association for Memory, Massachusetts Institute of Technology, 10-minute data blitz, Nov. 1, 2006.

41. J. Weng and M. Luciw, "Multilayer In-Place Learning Network for Functional Development of Sensorimotor Pathways," Annual Meeting of the Charles Rivers Association for Memory, poster presentation, Massachusetts Institute of Technology, poster presentation, Nov. 1, 2006.

42. J. Weng, "Computational Functional Development of the Central Nervous System," Perceptual Science Group, Department of Brain and Cognitive Science, Massachusetts Institute of Technology, Cambridge, Massachusetts, Oct. 30, 2006.

43. J. Weng, "Robotic Mental Architectures and Developmental Algorithms," Shengyang Institute of Automation, Shengyang, Jan. 16, 2006.

44. J. Weng, "Biologically Inspired Architectures and Algorithms for Mental Development," Fudan University, Shanghai, Jan. 7, 2006.

45. J. Weng, "Autonomous Mental Development and Robot Perception," Changsha University of Science and Technology, Changsha, China, Dec. 21, 2005.

46. J. Weng, "Robot Mental Development and Online Learning," Huazhong University of Science and Technology, Wuhan, Dec. 20, 2005.

47. J. Weng, "Online Learning for Multimodal Sensing, Attention and Data Fusion," GM Research and Development, Sept. 2, 2005.

48. J. Weng, "Autonomous Mental Development by Robots and Animals," Dept. of Computer Science, Wayne State University, Sept. 28, 2004.

49. J. Weng, "Mentally Developing Robots," Fudan University, Shanghai, China, Jan. 6, 2004.

50. J. Weng, "What Makes Us Human?", Michigan *One Book, One Community Program,* invited talk and panel discussion, East Lansing Public Library, Oct. 2, 2003.

51. J. Weng, "Robot Mental Development and Online Learning," Forschungszentrum Informatik, University of Karlsruhe, Karlsruhe, Germany, July 8, 2003.

52. J. Weng, "Robot Mental Development and Online Learning," University of Hamburg, Hamburg, Germany, July 4, 2003.

53. J. Weng, "Developmental Robotics: A New Paradigm," Second International Workshop on Epigenetic Robotics: Modeling Cognitive Development in Robotic Systems, Edinburgh, Scotland, August 10 - 11, 2002.

54. J. Weng, "Autonomous Mentally Developing Robots," National Chiao Tung University, Taiwan, Nov. 29, 2002.

55. J. Weng, "Autonomous Mental Development by Robots and Animals," Academia Sinica, Taiwan, Nov. 28, 2002.

56. J. Weng, "Autonomous Mental Development and Online Learning," National Tsing Hua University, Taiwan, Nov. 27, 2002.

57. J. Weng, "Progress in Intelligent Robot Research," Institute of Image Processing and Pattern Recognition, School of Electronics and Information Technology, Shanghai Jiao Tong University, Shanghai, China, June 31, 2002.

58. J. Wneg, "Concept Completeness of Intelligent Machines," Department of Computer Science, Fudan University, Shanghai, China, June 31, 2002.

59. J. Weng. "New Adavances in Developmental Robot Research," Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China, June 30, 2002.

60. J. Weng, "A Fundamental Flaw of Agent Models: Completeness of Intelligent Machines," Microsoft Research Asia, Beijing, China, May 17, 2002.

61. J. Weng, "Autonomous Mental Development for Robots," Institute of Automation, Chinese Academy of Sciences, Beijing, China, May 16, 2002.

62. J. Weng, "Action Chaining in Autonmous Mental Development," Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China, May 15, 2002.

63. J. Weng, "SAIL Robot for Autonomous Mental Development with Uncertainty," IJCAI-2001: Workshop on Reasoning with Uncertainty in Robotics," Seattle, Washington, August 4-5, 2001.

64. J. Weng, "Autonomous Programming by Robots: Mental Development," Microsoft Research, Redmond, Washington, July 20, 2001.

65. J. Weng, "Hierarchical Discriminant Regression (HDR) for Pattern Detection, Recognition and Autonomous Machine Learning," Institute of Image Processing and Pattern Recognition, School of Electronics and Information Technology, Shanghai Jiao Tong University, Shanghai, China, July 5, 2001.

66. J. Weng, "Hierarchical Discriminant Regression for Robot Mental Development," Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China, June 28, 2001.

67. J. Weng, "Hierarchical Discriminant Regression for Pattern Detection, Recognition and Autonomous Machine Learning ," Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China, June 27, 2001.

68. J. Weng, "Hierarchical Discriminant Regression for Multimodal Development and Integration," Institute of Automation, Chinese Academy of Sciences, Beijing, China, June 26, 2001.

69. J. Weng, "Multimodal Development and Online Learning," Microsoft Research, Beijing, China, June 25, 2001.

70. J. Weng, "Online Machine Learning for Cognitive Development," Department of Computer Science, Fudan University, Shanghai, China, June 19, 2001.

71. J. Weng, "Autonomous Mental Development by Robots and Animals," College of Engineering, University of Michigan at Dearborn, Dearborn, MI Feb. 16, 2001.

72. J. Weng, "DRS: An Integrated Hybrid Software Framework for Autonomous Mobile Robots," DARPA MARS-DRS 2000 Spring Conference, Huston, TX, May 24, 2000.

73. J. Weng, "Some Major Research Problems for Autonomous Mental Development by Machines," NSF/DARPA Workshop on Development and Learning, Michigan State University, East Lansing, MI, April 5-7, 2000.

74. J. Weng, "Quests for Mental Development Models," NSF/DARPA Workshop on Development and Learning, Michigan State University, East Lansing, MI, April 5-7, 2000.

75. J. Weng, "Discriminant Regression Tree for Image-Based Search and Automatic Skill Development," Dagstuhl Seminar: Multi-Image Search, Filtering, Reasoning and Visualization. Schloss Dagstuhl. International Conference and Research Center for Computer Science, Wadern, Germany, March 12 - 17, 2000.

76. J. Weng, "DRS: An Integrated Hybrid Software Framework for Autonomous Mobile Robots," DARPA MARS Workshop, Aberdeen, MD, January, 12, 2000.

77. J. Weng, "Living Machines: The Developmental Approach to Artificial Intelligence," Beckman Institute, University of Illinois, Urbana, IL, Nov. 11, 1999.

78. J. Weng, "Living Machines: The Developmental Approach to Artificial Intelligence," Human Dynamics Group, Media Laboratory, Massachusetts Institute of Technology, Cambridge, Massachusetts, Sept. 30, 1999.

79. J. Weng, "Developmental Machines" Nissan Cambridge Basic Research, Cambridge, Massachusetts, Sept. 27, 1999.

80. J. Weng, "The Developmental Approach to Intelligent Machines," Siemens Corporate Research, Princeton, New Jersey, September, 9, 1999.

81. J. Weng, "DRS: An Integrated Hybrid Software Framework for Autonomous Mobile Robots," DARPA MARS Kick-off meeting, Orlando, FL, July 22, 1999.

82. J. Weng, "Living Machines: The Developmental Approach to Artificial Intelligence," Advanced Telecommunications Research Institute International (ATR), Kyoto, Japan, July 6, 1999.

83. J. Weng, "Living Machines: The Developmental Approach to Artificial Intelligence," Welback Enterprises Limited, Hong Kong, June 14, 1999.

84. J. Weng, "Living Machines: The Developmental Approach to Artificial Intelligence," National Laboratory of Pattern Recognition, Chinese Academy of Sciences, Beijing, China, June 11, 1999.

85. J. Weng, "The Developmental Robots," Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China, June 10, 1999.

86. J. Weng, "Living Machines: The Developmental Approach to Artificial Intelligence," Department of Computer Science, Fudan University, Shanghai, China, May 31, 1999.

87. J. Weng, "Developmental Learning Machines," *Robotics Department, Mechanical Engineering Laboratory, MITI*, Japan, April 14, 1998.

88. J. Weng, "The Role of Learning," *1998 AAAI Spring Symposium Series, Integrating Robotic Research: Taking The Next Leap*, Stanford University, March 23-25, 1998.

89. J. Weng, "Developmental Learning Machines," Jet Propulsion Laboratory, Pasadena, California, Oct. 8, 1997.

90. J. Weng, "Machine Learning for Vision and Beyond," Siemens Corporate Research, Princeton, New Jersey, May 22, 1997.

91. J. Weng, "Visual Learning and Visualization," Naval Surface Warfare Center, West Bethesda, Maryland, May 9, 1997.

92. J. Weng, "Sensing, Control, Intelligence, and Learning," *IEEE Workshop on Architectures or Mathematics: What Determines the Design of Intelligent Systems*, Dearborn, MI, September 19, 1996.

93. J. Weng, "Toward Multimedia Understanding Systems," Artificial Intelligence Laboratory, Department of Electrical and Computer Science, *University of Michigan*, Ann Arbor, Michigan, March 23, 1996.

94. J. Weng, "SHOSLIF: A framework for sensor-based learning for high-dimensional complex systems," *IEEE Workshop on Architectures for Semiotic Modeling and situation analysis in Large Complex Systems*, Monterey, CA, Aug. 29, 1995.

95. J. Weng, "Frameworks for Visual Learning," *Delft University of Technology*, Delft, The Netherlands, June 29, 1995.

96. J. Weng, "Frameworks for Visual Learning," *Stanford University*, Seminar on Computational Learning and Adaptation, June 14, 1995.

97. J. Weng, "Frameworks for Visual Learning," *IBM Almaden Research Center*, San Jose, CA, June 13, 1995.

98. J. Weng, "Frameworks for Visual Learning," *Ricoh California Research Center*, Menlo Park, CA, June 12, 1995.

99. J. Weng, "Frameworks for Visual Learning," *Center for Biological and Computational Learning,* Massachusetts Institute of Technology, Cambridge, Massachusetts, Oct. 19, 1994.

100. J. Weng, "SHOSLIF: A Learning System for Vision and Control," *IEEE Annual Workshop on Architectures for Intelligent Control Systems,* Columbus, Ohio, August 16, 1994.

101. J. Weng, "SHOSLIF: A framework for Object Recognition from Images," *IEEE International Conference on Neural Networks*, Orlando, FL, July 1, 1994.

102. J. Weng, "On Comprehensive Visual Learning," *NSF/ARPA Workshop on Performance vs. Methodology in Computer Vision*, Seattle, WA, June 25, 1994.

103. J. Weng, "Research on Computer Vision," Department of Computer Science, Fudan University, Shanghai, China, Seminar series, April 12 - 13, 1994.

104. J. Weng, "A Self-Organizing Approach to Object Recognition," *International Symposium of Young Investigators on Information, Computers and Control*, Beijing, China, Feb. 2, 1994.

105. J. Weng, "Learning and Recognition using Cresceptron," Siemens Corporate Research, Princeton, New Jersey, July 1993.

106. J. Weng, "Image Understanding and Neural Networks," *Computer Science Department, Michigan State University*, East Lansing, Michigan, April 1992.

107. J. Weng, "Image Understanding and Neural Networks," *Computer Science Department, Purdue University*, West Lafayette, IN, March 1992.

108. J. Weng, "Image Analysis: Motion Estimation, Neural Learning, and Recognition," Siemens Corporate Research, Princeton, NJ, March 1992.

109. J. Weng, "Image Understanding and Neural Networks," *Computer Science Department, Oklahoma State University*, Stillwater, Oklahoma, USA, Feb. 1992.

110. J. Weng, "New Techniques for Intelligent Robots," *University of Montreal*, Montreal, Quebec, Canada, Nov. 1991.

111. J. Weng, "Computer Vision and Neural Computing," *NEC Research Institute*, Princeton, NJ, USA, Nov. 1991.

112. J. Weng, "Dynamic Scene Analysis," *Department of Computer Science, University of North Carolina at Charlotte*, Charlotte, NC, USA, April, 1991.

113. J. Weng, "Stereo and Temporal Image Matching: Theory and Algorithm," *Nippon Telegraph and Telephone Corporation*, Tokyo, Japan, Nov. 1990.

114. J. Weng, "Motion Analysis and Structure from Motion," *Signal and Image Processing Institute, University of Southern California*, Los Angeles, CA, USA, June. 1989.

115. J. Weng, "Image Analysis and Scene Reconstruction," *National Defense Research Establishment Valcartier*, Courcelette, Quebec, Canada, March, 1989.

116. J. Weng, "Computer Vision and Autonomous Navigation," *National Defense Research Establishment Ottawa*, Ottawa, Canada, March, 1989.

117. J. Weng, "Motion Analysis and Structure from Motion," *Computer Research Institute of Montreal (CRIM)*, Montreal, Quebec, Canada, Nov., 1988.

118. J. Weng, "Motion and Structure from Image Sequences," *McGill Research Center for Intelligence Machine*, McGill University, Montreal, Quebec, Canada, April, 1988.

119. J. Weng, "Estimating Motion and Structure from Image Sequences," *IBM Los Angeles Scientific Center*, Los Angeles, CA, USA, June. 1987.

Tutorials and BMI Courses

J. Weng, "BMI 871: Computational Brain-Mind," East Lansing, Michigan, June 14 - August 1, 2014.

J. Weng, "Introduction to Computational Brain-Mind," 3 hours, International Conference on Development and Learning, and on Epigenetic Robotics (ICDL-EpiRob), Osaka, Japan, August 18-22, 2013,

J. Weng, "Natural and Artificial Intelligence: Introduction to Computational Brain-Mind," International Joint Conference on Neural Networks, Dallas, TX, 8:00am - 9:45am, August 4, 2013.

J. Weng, "BMI 831: Cognitive Science for Brain-Mind Research," East Lansing, Michigan, July 15 - Aug. 2, 2013.

J. Weng, "BMI 871: Computational Brain-Mind," Fudan University, Shanghai, China, June 17 - July 5, 2013.

J. Weng, "BMI 871: Computational Brain-Mind," Fudan University, Shanghai, China, August 6 - 24, 2012.

J. Weng, "Computational Brain-Mind: From Biology, Neuroscience, Psychology, Computer Science, Electrical Engineering, and Mathematics, " 13:00-17:00, WCCI wide tutorial, World Congress on Computational Intelligence, Brisbane, Australia, June 10, 2012.

J. Weng, "Computational Brain-Mind: Development, Architecture, Areas, Space, Time, and Modulation," 4 hours, IEEE 10th International Conference on Development and Learning, and on Epigenetic Robotics (ICDL-EpiRob), Frankfurt, Germany, August 24-27, 2011.

J. Weng, "Brain-Mind Explained in Mathematics," Fudan University, 6 hours, May 16 and 30, 2011.

J. Weng, "A Computational Introduction to the Brain-Mind," 1.5 hours, 2011 INNS International Educational Symposium on Neural Networks, Lima, Peru, January, 25-27, 2011.

J. Weng, "General-Purpose Vision Architecture, Invariance, Attention and Reasoning," 3 hours, IEEE Conference on Computer Vision and Pattern Recognition, San Francisco, June 13-18, 2010.

J. Weng, "Brain Inspired Mental Architectures, " 3 hours. IEEE 8th International Conference on Development and Learning, June 4, 2009.

J. Weng, "Cognitive and Neural Development," 2.5 hours, IEEE/INNS International Joint Conference on Neural Networks, Orlando, Florida, August 12, 2007.

J. Weng, "Computational Cognitive and Neural Development," Dragon Star Lecture Series, 30 hours, Fudan University, Shanghai, China, July 23 - 27, 2007.

J. Weng, "Biologically Motivated Mental Architectures," 2.5 hours, IEEE World Congress on Computational Intelligence, Vancouver, Canada, July 16, 2006.

J. Weng, "Autonomous Mental Development," 1.5 hours, 3rd International Conference on Development and Learning, Salk Institute, La Jolla, CA, Oct. 20, 2004.

J. Weng, "Autonomous Mental Development: A New Frontier for Computational Intelligence," 2 hours, International Joint Conference on Neural Networks, Budapest, July 25, 2004.

J. Weng, "Autonomous Mental Development," 18 lecture hours, Institute of Information, Fudan University, Shanghai, China, June 28 - July 3, 2004.

J. Weng, "Developmental Vision," 3 hours, 6th Asian Conference on Computer Vision, Jeju, Korea, Jan. 27-30, 2004.

J. Weng, " Autonomous Mental Development and On-line Learning from Multimedia Signal Streams," 3 hours, IEEE International Symposium on Intelligent Signal Processing and Communication Systems, Kaohsiung, Taiwan, Nov. 21-24, 2002.

J. Weng, "Autonomous Mental Development for Robots," 3 hours, IEEE International Conference on Development and Learning, Cambridge, MA, June 12-15, 2002.

J. Weng, "Robot Mental Development and Online Learning," 3 hours, IEEE International Conference on Robotics and Automation, Seoul, Korea, May 21-26, 2001.

J. Weng, "Mental Development and On-line Learning," 3 hours, IASTED International Conference on Robotics and Applications (RA 2000), Honolulu, Hawaii, August 14-16, 2000.

Courses Taught

Semester	Course No.	Level	Course Title
Fall 1992	CPS803	Graduate	Computer Vision
Spring 1993	CPS472	Undergraduate	Computer Graphics
Fall 1993	CPS902	Graduate	Selected Topics in PR: Analysis of Image Sequences
Spring 1994	CPS472	Undergraduate	Computer Graphics
Fall 1994	CPS360	Undergraduate	Automata and Formal Language Theory
	CPS803	Graduate	Computer Vision
Spring 1995	CPS360	Undergraduate	Automata and Formal Language Theory
Fall 1995	CPS360	Undergraduate	Automata and Formal Language Theory
Spring 1996	CPS902	Graduate	Selected Topics in PR: Learning for Computer Vision and Beyond
	CPS472	Undergraduate	Computer Graphics
Fall 1996	CPS803	Graduate	Computer Vision
Spring 1997	CPS330	Undergraduate	Data Structure and Programming
	CPS472	Undergraduate	Computer Graphics
Fall 1997	CPS330	Undergraduate	Data Structure and Programming
	CPS803	Graduate	Computer Vision
Spring 1998	CPS902	Graduate	Selected Topics in PR: Multimodal Learning and Information Fusion
Fall 1998	CPS803	Graduate	Computer Vision
Spring 1999	CPS360 Sec 1	Undergraduate	Automata and Formal Language Theory
	CPS360 Sec 2	Undergraduate	Automata and Formal Language Theory
Fall 1999	-	-	Sabbatical at MIT
Spring 2000	-	-	Sabbatical at MIT
Fall 2000	CSE803	Graduate	Computer Vision
Spring 2001	CSE902	Graduate	Selected Topics in PR: Mental Development and Online Learning
Fall 2001	CSE841	Graduate	Artificial Intelligence
	CSE440	Undergraduate	Artificial Intelligence and Symbolic Programming
Spring 2002	-	-	-
Fall 2002	CSE803	Graduate	Computer Vision
	CSE841	Graduate	Artificial Intelligence
Spring 2003	-	-	-
Fall 2003	CSE841	Graduate	Artificial Intelligence
	CSE941	Graduate	Selected Topics in AI: Autonomous Mental Development
Spring 2004	CSE460	Undergraduate	Computability and Languages
Fall 2004	CSE803	Graduate	Computer Vision
	CSE841	Graduate	Artificial Intelligence
Spring 2005	-	-	-
Fall 2005	CSE460	Undergraduate	Computability and Languages
	CSE841	Graduate	Artificial Intelligence
Spring 2006	-	-	-
Fall 2006	-	-	Sabbatical at MIT
Spring 2007	MIT BCS9.915 also EECS6.887	Graduate	Computational Cognitive and Neural Development http://stellar.mit.edu/S/course/9/sp07/9.915J/ (Sabbatical)

Semester	Course No.	Level	Course Title
Fall 2007	CSE803	Graduate	Computer Vision
	CSE331	Undergraduate	Algorithms and Data Structures
Spring 2008	CSE331	Undergraduate	Algorithms and Data Structures
Fall 2008	CSE841	Graduate	Artificial Intelligence
	CSE891	Graduate	Brain Inspired Developmental Systems (1 credit)
Spring 2009	CSE331	Undergraduate	Algorithms and Data Structures (2 sections)
	CSE891	Graduate	Brain Inspired Developmental Systems (1 credit)
Fall 2009	CSE331	Undergraduate	Algorithms and Data Structures
	CSE941	Graduate	Selected Topic in AI: Developmental Vision
Spring 2010	CSE331	Undergraduate	Algorithms and Data Structures
Fall 2010	CSE841	Graduate	Artificial Intelligence
	CSE331	Undergraduate	Algorithms and Data Structures
Spring 2011	CSE331	Undergraduate	Algorithms and Data Structures
Fall 2011	CSE941	Graduate	Selected Topic in AI: Computational Brain-Mind
Spring 2012	CSE331	Undergraduate	Algorithms and Data Structures (2 sections)
Summer 2012	BMI 871	Graduate & above	Computational Brain-Mind (3 credits) (Weng 2012 as textbook)
	BMI 811	Graduate & above	Biology for Brain-Mind Research (3 credits) Weng as a registered student, passed
	BMI 821	Graduate & above	Neuroscience for Brain-Mind Research (3 credits) Weng as a registered student, passed
Fall 2012	CSE841	Graduate	Artificial Intelligence (Weng 2012 and Russell & Norvig 2010 as textbooks)
Spring 2013	CSE260	Undergraduate	Discrete Structures in Computer Science (2 sections)
Summer 2013	BMI 871	Graduate & above	Computational Brain-Mind (3 credits) (Weng 2012 as textbook)
	BMI 831	Graduate & above	Cognitive Science for Brain-Mind Research (3 credits) (Gluck, Mercado & Myers 2013 as textbook)
Fall 2013	CSE841	Graduate	Artificial Intelligence (Weng 2012 and Russell & Norvig as textbooks)
	CSE440	Undergraduate	Introduction to Artificial Intelligence (Weng 2012 and Russell & Norvig as textbooks)
Spring 2014	CSE260	Undergraduate	Discrete Structures in Computer Science (2 sections)
Summer 2014	BMI 871	Graduate & above	Computational Brain-Mind (3 credits) (Weng 2012 as textbook)
Fall 2014	CSE841	Graduate	Artificial Intelligence (Weng 2012 as textbooks)
	CSE260	Undergraduate	Discrete Structures in Computer Science (3 sections)
Spring 2015	CSE260	Undergraduate	Discrete Structures in Computer Science (2 sections)

Juyang Weng, February 15, 2015