Yeong-Hwa CHANG

Professor, Department of Electrical Engineering, Chang Gung University
259 Wen-Hwa 1st Rd., Kwei-Shan, Tao-Yuan, Taiwan, R.O.C.
(O) 886-3-2118800 ext 5697, yhchang@mail.cgu.edu.tw
URL: http://yhchangcgu.wix.com/iclatcgu

EDUCATION

1995	Ph.D., Electrical and Computer Engineering, The University of Texas at Austin, USA
1987	M.S., Control Engineering, National Chiao Tung University, Taiwan
1982	B.S., Electrical Engineering, Chung Chang Institute of Technology, Taiwan

EXPERIENCE

2013-	Director of Computer Center, Chang Gung University, Taiwan
2011-	Professor, Department of Electrical Engineering, Chang Gung University, Taiwan
2011-2012	Visiting Scholar, School of Electrical and Computer Engineering, Georgia Institute of Technology, USA
2010-2011	Head of on-job master program, Department of Electrical Engineering, Chang Gung University, Taiwan
2010/1	Visiting Scholar, School of Electrical & Electronic Engineering, Nanyang Technological University, Singapore
2002-2011	Associate Professor, Department of Electrical Engineering, Chang Gung University, Taiwan
2000-2002	Professor and Chairman, Department of Electrical Engineering, Chung Cheng Institute of Technology, National Defense University, Taiwan
2000-2001	Adjunct Professor, Department of Electrical Engineering, Yuan Ze University, Taiwan
1998-2000	Head of electrical program, Department of Electrical Engineering, Chung Cheng Institute of Technology, Taiwan
1995-2000	Associate Professor, Department of Electrical Engineering, Chung Cheng Institute of Technology, Taiwan
1987-1990	Lecturer, Department of Electrical Engineering, Chung Cheng Institute of Technology, Taiwan
1982-1985	Teaching Assistant, Department of Electrical Engineering, Chung Cheng Institute of Technology, Taiwan

SUPERVISED RESEARCH PROJECTS (2002-)

- *Fuzzy Sliding-Mode Formation Control for Multi-Robot Dynamic Systems with Switching Topologies and Time Delays* (supported by National Science Council, Taiwan) August 1, 2012 – July 31, 2014
- *Fuzzy Sliding-Model Formation Control of Multi-Robot Systems with Switching Topologies and Time-Delays* (supported by National Science Council, Taiwan) August 1, 2011 – July 31, 2012
- *Dynamic Searching and Guidance of Swarm Robots with Particle Swarm Optimization* (supported by National Science Council, Taiwan) August 1, 2008 – July 31, 2011
- *Development of Surgical Simulation Systems with Haptic Feedback* (supported by Ministry of Economic Affairs, Taiwan**)** December 1, 2008 – November 30, 2010
- *DSP/FPGA Based Dynamic Balance Control of Robots* (supported by National Science Council, Taiwan**)** August 1, 2007 – July 31, 2008
- *Development of Intelligent Temperature Control Systems with Networked Monitoring* (supported by National Science Council, Taiwan**)** November 1, 2006 – October 31, 2007
- *Development of SOPC Based Intellectual Properties of Induction Motor Control Systems* (supported by National Science Council, Taiwan**)** August 1, 2003 – July 31, 2006
- *Design and Implementation of Network-Based Linear Motor Drive Systems* (supported by National Science Council, Taiwan**)** August 1, 2002 – July 31, 2003

TEACHING EXPERIENCE

Chang Gung University	Graduate	Linear Systems, Nonlinear Systems, Robust Control, Fuzzy Control, Neural Network, Adaptive Control, Multivariable Control Systems, Digital Control
	Undergraduate	Linear Algebra, Control Engineering, Control Engineering Experiment, Signals and Systems, Logic Design, Logic Design Experiment , Electric Circuits
Yuan Ze University	Undergraduate	Electronics
Chung Cheng Institute of Technology	Graduate	Linear Systems, Nonlinear Systems, Robust Control, System Identification
	Undergraduate	Electric Circuits, Electrical Machinery, Automatic Control, Digital Control, Numerical Analysis

JOURNAL PAPERS

Y.-H. Chang and W.-S. Chan, "Adaptive Dynamic Surface Control for Uncertain Nonlinear Systems with Interval Type-2 Fuzzy Neural Networks," IEEE Trans. on Cybernetics, vol. 44, no. 2, pp.293-304, 2014.

Y.-H. Chang, C.-Y. Yang, W.-S. Chan, H.-W. Lin, and C.-W. Chang, "Adaptive Fuzzy Sliding-Mode Formation Controller Design for Multi-robot Dynamic Systems," Int. Journal of Fuzzy Systems, vol. 16, no. 1, pp.121-131, 2014.

Y.-H. Chang, C.-L. Chen, W.-S. Chan, and H.-W. Lin, "Interval Type-2 Fuzzy Formation Control for Collision-Free Multi-Robot Systems**,"** Int. Journal of Fuzzy Systems, vol. 15, no. 4, pp.435-451, 2013.

H.-W. Lin, W.-S. Chan, C.-W. Chang, C.-Y. Yang, and Y.-H. Chang, "Adaptive Neuro-Fuzzy Formation Control for Leader-Follower Mobile Robots," Int. Journal of Fuzzy Systems, vol. 15, no. 3, pp.347-358, 2013.

C.-H. Hsu, C.-Y. Lee, Y.-H. Chang, F.-J. Lin, C.-M. Fu, and J.-G. Lin, "Effect of Magnetostriction on the Core Loss, Noise, and Vibration of Fluxgate Sensor Composed of Amorphous Materials," IEEE Trans. on Magnetics, vol. 49, no. 7, pp.3862-3865, 2013.

Y.-H. Chang, C.-L. Chen, W.-S. Chan, H.-W. Lin, and C.-W. Chang, "Fuzzy Formation Control and Collision Avoidance for Multi-Agent Systems," Mathematical Problems in Engineering, vol. 2013, pp.1-18, http://dx.doi.org/10.1155/2013/908180, 2013.

Y.-H. Chang, W.-S. Chan, and C.-W. Chang, "T-S Fuzzy Model Based Adaptive Dynamic Surface Control for Ball and Beam System," IEEE Trans. on Industrial Electronics, vol. 60, no. 6, pp.2251-2263, 2013.

C. W. Tao, J. S. Taur, C.-W. Chang, and Y.-H. Chang, "Simplified Type-2 Fuzzy Sliding Controller for Wing Rock System," Fuzzy Sets and Systems, vol. 27, pp.111-129, 2012.

Y.-H. Chang, C.-I Wu, H.-C. Chen, C.-W. Chang, and H.-W. Lin, "Fractional Order Integer Sliding-Mode Flux Observer for Direct Field-Oriented Induction Machines," Int. J. Innovative Computing, Information and Control, vol. 8, no. 7, 2012.

Y.-H. Chang, Y.-T. Chen, M.-H. Hung, and A. Y. Chang, "Development of an e-Operation Framework for SOPC-Based Reconfigurable Applications," Int. J. Innovative Computing, Information and Control, vol. 8, no. 5(B), pp.3639-3660, 2012.

Y.-H. Chang, C.-W. Chang, C.-L. Chen, and C.-W. Tao, "Fuzzy Sliding-Mode Formation Control for Multi-Robot Systems: Design and Implementation," IEEE Trans. on Systems, Man and Cybernetics-Part B, vol. 42, no. 2, pp.444-457, 2012.

C.-H. Hsu, Y.-H. Chang, C.-Y. Lee, C.-S. Yao, Y.-L. He, H.-L. Chu, C.-W. Chang, and W.-S. Chan, "Effects of Magnetomechanical Vibrations and Bending Stresses on Three-Phase Three-Leg Transformers with Amorphous Cores," Journal of Applied Physics, vol. 111, pp.07E730-1-3, 2012.

Y.-H. Chang, C.-W. Chang, C.-W. Tao, H.-W. Lin, and J.-S. Taur, "Fuzzy Sliding-Mode Control for Ball and Beam System with Fuzzy Ant Colony Optimization," Expert Systems with Applications, vol. 39, no. 3, pp.3624-3633, 2012.

B.-F. Hsu, Y.-H. Chang, Y.-C. Cheng, S.-K. Lie, C.-C. Lin, C.-H. Hsu, C.-W. Chang, W.-S. Jan, and C.-H. Chou, "Smart Maintenance System for Three-Phase Power Transformer via Fuzzy Logic Approach," Int. J. of Circuits, Systems and Signal Processing, vol. 5, no. 4, pp.370-381, 2011.

Y.-H. Chang, C.-H. Hsu, H.-L. Chu, and C.-P. Tseng, "Influence of Bending Stress on Magnetic Properties of 3-Phase 3-Leg Transformers with Amorphous Cores," IEEE Trans. on Magnetics, vol. 47, no. 10, pp.2776-2779, 2011.

Y.-H. Chang, C.-H. Hsu, H.-L. Chu, and C.-P. Tseng, "Magnetomechanical Vibrations of Three-Phase Three-Leg Transformer with Different Amorphous-Cored Structures," IEEE Trans. on Magnetics, vol. 47, no. 10, pp.2780-2783, 2011.

C. W. Tao, J. Taur, C.-C. Chuang, C.-W. Chang, and Y.-H. Chang, "An Approximation of Interval Type-2 Fuzzy Controllers using Fuzzy Ratio Switching Type-1 Fuzzy Controllers," IEEE Trans. on Systems, Man and Cybernetics: Part B, vol. 41, no. 3, pp.828-839, 2011.

Y.-H. Chang, C.-H. Hsu, H.-W Lin, and C.-P. Tseng, "Reducing Audible Noise for Distribution Transformer with HB1 Amorphous Core," Journal of Applied Physics, vol. 109, pp.07A318-1-3, 2011.

Y.-H. Chang, W.-S. Chan, C.-W. Chang, and C.-W. Tao, "Adaptive Fuzzy Dynamic Surface Control for Ball and Beam System," Int. J. Fuzzy Systems, vol. 13, no. 1, pp.1-7, 2011.

Y.-H. Chang, C.-I Wu, H.-W. Lin, and N.-D. Kuo, "Robust Performance Control of Vector-Controlled Induction Motors with Gain-Scheduled Estimation and Input-Output Linearization," International Journal of Innovative Computing, Information and Control, vol. 7, no. 1, pp.269-288, 2011.

C.W. Tao, J.S. Taur, Y.-H. Chang, and C.W. Chang, "A Novel Fuzzy Sliding and Fuzzy Integral Sliding Controller for the Twin Rotor Multi-Input Multi-Output System," IEEE Trans. on Fuzzy Systems, vol. 18, no. 5, pp.893-905, 2010.

Y.-H. Chang, C.-H. Hsu, C.-W. Chang, C.-W. Tao, H.-W. Lin, and C.-P. Tseng, "Influence of Annealing on Magnetic Properties and Sound Levels of Fe-Based Amorphous Cores Transformer," Int. J. of Electronics, Electrical and Communication Engineering, vol. 2, no. 1, pp.57-75, 2010.

Y.-H. Chang, C.-H. Hsu, H.-W. Lin and C.-P. Tseng, "Systematic Study of Low Loss Amorphous Core Transformers: Design, Fabrication and Testing," International Journal of Intelligent Systems Science and Technology, vol. 2, no. 1, pp.36-43, 2010.

Y.-H. Chang, Y.-T. Chen, H.-W. Lin, R.-J. Chen, C.-Y. Yeh, C.-T. Wu, and S.-T. Lee, "Real-Time Deformation of Soft Tissues with Hapic Rendering," International Journal of Intelligent Systems Science and Technology, vol. 2, no. 1, pp.50-57, 2010.

Y.-H. Chang, C.-H. Hsu, and C.-P. Tseng, "Magnetic Properties Improvement of Amorphous Cores using Newly Developed Step-Lap Joints," IEEE Trans. on Magnetics, vol. 46, no.6, pp.1791-1794, 2010.

K.-Y. Chang, W.-B. Wu, Y.-H. Chang, and P.-C. Chen, “Multi-Objective Controller Design for Uncertain Large-Scale Stochastic Systems with Time Delays via LMI Optimizations,” Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering, vol. 224, no. 3, pp.247-259, 2010.

Y.-H. Chang, Y.-T. Chen, C.-W. Chang, and C.-L. Lin, “Development Scheme of Haptic-Based System for Interactive Deformable Simulation,” Computer-Aided Design, vol. 42, pp.414-424, 2010.

Y.-H. Chang, C.W. Chang, W.S. Chan, J.S. Taur, and C.W. Tao, “Robust and Stable Hybrid Fuzzy Control of a Pendulum-Cart System with Particle Swarm Optimization,” Int. J. Fuzzy Systems, vol. 12, no. 1, pp.48-58, 2010.

Y.-H. Chang, C.W. Chang, J.S. Taur, and C.W. Tao, “Fuzzy Swing-Up and Fuzzy Sliding-Mode Balance Control for A Planetary Gear-Type Inverted Pendulum,” IEEE Trans. on Industrial Electronics, vol. 56, no. 9, pp.3751-3761, 2009.

Y.-H. Chang, C.W. Chang, H.-W. Lin, and C.W. Tao, “Fuzzy Controller Design for Ball and Beam System with an Improved Ant Colony Optimization,” Proc. of World Academy of Science, Engineering and Technology, vol.56, pp.616-621, 2009.

Y.-H. Chang, H.-W. Lin, Y.-H. Hu, and J.-H. Lee, “Fuzzy-Scheduling Control of Linear PM Synchronous Motor with Payload Variations,” Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering, vol. 222, no. 6, pp.465-479, 2008.

Y.-H. Chang, C.-W. Chang, C.-H. Yang, and C. W. Tao, “Swing Up Balance Control of Planetary Train Type Pendulum with Fuzzy Logic and Energy Compensation,” Int. J. Fuzzy Systems, vol. 9, no. 2, pp.87-94, 2007.

W.-B. Wu, G. Chen, P.-C. Chen, K.-Y. Chang, and Y.-H. Chang, “Robust Decentralized Control with Multi-Objective Performance Design for Stochastic Large-Scale System via LMI Approach,” Proc. of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering, vol. 221, no. 7, pp.1047-1060, 2007.

Y.-H. Chang, Y.-Y. Wang, P.-C. Chen, and M.-H. Hung, "Fuzzy-Scheduling Integral Control of Induction Servo Motor with Actuator Saturation via LMI Approach," Int. J. Computer Applications in Technology, vol.27, no.2/3, pp.107-118, 2006.

Y.-H. Chang, Y.-Y. Wang, P.-C. Chen, and M.-H. Hung, "Regional Stability and H_∞ Performance Control of Input-Saturated Induction Motor via LMI Approach," Asian Journal of Control, vol.7, no.4, pp.368-379, 2005.

C.-D. Yang, C.-C. Luo, S.-J. Liu, and Y.-H. Chang, “Applications of Genetic-Taguchi Algorithm in Flight Control Design,” J. of Aerospace Engineering, vol.18, no.4, pp.232-241, 2005.

Y.-H. Chang, H.-W. Lin, and G. Chen, “Compensation on Hall Effect Sensor of PWM Switching Control,” J. of Magnetism and Magnetic Materials, vol. 282, pp.307-310, 2004.

P.-C. Chen, Y.-F. Jeng, Y.-H. Chang, Y.-M. Wang, and G. Chen, "Robust Gain-Scheduled Control of Vertical Takeoff Aircraft with Actuator Saturation via LMI Method," Asian Journal of Control, vol.6, no.1, pp.112-122, 2004.

P.-C. Chen, Y.-H. Chang, Y.-M. Wang, and G. Chen, "Coordinated Power System Stabilizer Design via Gain-Scheduled H_∞-Optimization", J. Chinese Institute of Electrical Engineering, vol.10, no.3, pp.235-246, 2003.

C.-C. Luo, R.-F. Liu, C.-D., Yang, and Y.-H. Chang, "Helicopter H_∞ Control Design with Robust Flying Quality," Aerospace Science and Technology, vol.7, no.2, pp.159-169, 2003.

T.-K. Lin, Y.-H. Chang, and D.-R. Huang, "Design Method of 3D Flux Magnetic Leakage Profiles for High Precise Motor Drive," Journal of Applied Physics, vol.91, no.10, pp.6970-6972, 2002.

Y.-H. Chang, J.-C. Chang, C.-J. Lee, and Y.-Y. Wang, "Modeling and QFT-Based Controller Design of Vector Control Induction Motors," J. Chinese Institute of Engineers, vol.24, no.4, pp.473-485, 2001.

Y.-H. Chang and J.-C. Chang, "Quantitative Design for Multivariable Systems with Uncertainty," Int. J. Systems Science, vol.32, no.3, pp.331-344, 2001.

Y.-H. Chang and J.-C. Chang, "Robust Wedge-Stability Analysis and Synthesis of Constrained Continuous Systems by Stability Radii," Int. J. Systems Science, vol.31, no.9, pp.1067-1075, 2000.

Y.-H. Chang and Y.-Y. Wang, "Self-Tuning Speed Controller Design of Vector Control Induction Motor Drives," J. Chinese Institute of Electrical Engineering, vol.7, no.4, pp.263-273, 2000.

C.-P. Liu, T.-K. Lin, Y.-H. Chang, C.-S. Yu, K.-T. Wu, S.-J. Wang, T.-F. Ying, and D.-R. Huang, "Study of Eddy Current and Power Loss from Outer-Winding Coils of a Magnetic Position Sensor," J. of Magnetism and Magnetic Materials, vol.209, no.1-3, pp.201-204, 2000.

T.-K. Lin, Y.-H. Chang, H.-C. Huang, S.-J. Wang, T.-F. Ying, and D.-R. Huang, "The Dynamic Performance Affected by the Axial Magnetic Force for a DVD Spindle Motor," J. of Magnetism and Magnetic Materials, vol.209, no.1-3, pp.183-185, 2000.

C.-P. Liu, T.-K. Lin, Y.-H. Chang, S.-H. Hu, K.-T. Wu, L.-T. Kuo, H.-C. Huang, T.-F. Ying, and D.-R. Huang, "The Performance of a Single-Phase DC Brushless Motor Utilizing the Ferromagnetic Base Material," J. of Magnetism and Magnetic Materials, vol.209, no.1-3, pp.176-179, 2000.

Y.-H. Chang, "Robust Regional Stability Analysis of Continuous Time-Delay Systems," IEE Control Theory and Applications, vol.146, no.4, pp.311-318, 1999.

Y.-H. Chang, J.-C. Chang, and L.-W. Chen, "Quantitative Robust Diagonal Controller Design for MIMO Systems.," Journal of Chinese Institute of Engineers, vol.21, no.4, pp.425-440, 1998.

Y.-H. Chang and G.L. Wise, "Robust Gamma-Stability of Highly Perturbed Systems," IEE Control Theory and Applications, vol.145, no.2, pp.165-176, 1998.

Y.-H. Chang, "Robust D-Stability Analysis for Discrete-Time Delay Systems via Stability Radii," Journal of

Control Systems and Technology, vol.5, no.4, pp.263-276, 1997.

Y.-H. Chang, T.-T. Lee, and C.-H. Liu, "On-Line Approximation Cartesian Path Trajectory Planning for Robotic Manipulator," IEEE Trans. Systems, Man, and Cybernetics, vol.22, no.3, pp.542-547, 1992.

WORK IN PROGRESS

Cooperative control of multi-robot systems
Multi-agent systems with game-theoretic learning
Haptic feedback control of teleoperation systems
Type-2 neural fuzzy systems
Fractional controllers and systems

HONORS AND AWARDS

2013 1st place, Life Science Group, Paper Contest for Virtual Instrument Control, National Instruments Co., Taiwan
2011 Honorable Mention, Paper Contest for Virtual Instrument Control, National Instruments Co., Taiwan
2009 Best paper, 9th WSEAS Int. Conf. on Robotic, Control and Manufacturing Technology
2007 Excellence in Teaching Award, Chang Gung University
2007 1st place, Paper Contest for Virtual Instrument Control, National Instruments Co., Taiwan
2005 Excellent Supervisor in Intern Practice, Chang Gung University
2004 Excellent Supervisor in Intern Practice, Chang Gung University
1999 Excellence in Performance Award, Ministry of National Defense, Taiwan
1998 Excellence in Teaching Award, Ministry of National Defense, Taiwan
1998 Excellence in Teaching Award, Chung Cheng Institute of Technology
1997 Excellence in Teaching Award, Chung Cheng Institute of Technology
1990 Excellence in Teaching Award, Chung Cheng Institute of Technology

PROFESSIONAL MEMBERSHIPS AND SERVICES

IEEE Senior Member (SM'12)
- IEEE Control Systems Society
- IEEE Computational Intelligence Society
- IEEE Industrial Electronics Society
- IEEE Power Electronics Society

Automatic Control Society, Taiwan