CHING-YAO CHAN'S RESEARCH PORTFOLIOS AND PUBLICATION LISTS
FEBRUARY 2008

I. Subject Area: Intersection Safety
Research Focus: Infrastructure-Based and Cooperative Intersection Decision Support

Archived Journal Publications

- C-Y. Chan, M. Danno, "Risk Assessment of Intersection Safety Countermeasures with the Use of Field Data," *International Journal of ITS Research*, Vol. 6, No. 1, Spring 2008.

- C-Y. Chan, "Characterization of Driving Behaviors Based on Field Observation of Intersection Left-Turn Across-Path Scenarios," *IEEE Transactions on Intelligent Transportation Systems*, Vol. 7, No. 3, Sept. 2006, pp. 322-331.

- C-Y Chan, D. Ragland, S.E. Shladover, J. Misener, D. Marco, "Observations of Driver Time-Gap Acceptance at Intersections in Left-Turn Across-Path Opposite Direction Scenarios," 2005 TRB Annual Meeting, Paper No. 05-2159, Transportation Research Record No. 1910, pp. 10-19.

- S.E. Shladover, D. Ragland, J. VanderWerf, C-Y Chan, "Design of Alert Criteria for an Intersection Decision Support (IDS) System," 2005 TRB Annual Meeting, Paper No. 05-2516, Transportation Research Record No. 1910, pp. 1-9.

Refereed Conference and Symposium Proceedings

- X. Wang, C-Y Chan, J. Misener, S. Shaldover, W-B Zhang, "Limiting Factors in the Use of Remote Sensors to Detect Road Hazards," *Transportation Research Board 2004 Annual Meeting*, Washington D.C., January 2004.

- C-Y Chan, D. Marco, J. Misener, "Traffic Observation for Intersection Decision Support – A Pilot Field Experiment, "*Proceedings of the* 2004 *Intelligent Transportation Systems Safety and Security Conference*, Miami, Florida, March 2004.

- C-Y Chan, D. Marco, J. Misener, "Threat Assessment of Traffic Moving Toward Signal-Controlled Intersections, " *Proceedings of the 2004 IEEE Intelligent Vehicles Symposium* in Italy, June 2004.

- C-Y Chan, D. Marco, "Traffic Monitoring at Signal-Controlled Intersections and Data-Mining for Safety Applications, "*Proceedings of the 2004 IEEE Intelligent Transportation System Conference* in Washington D.C., October 2004.

- S. E. Shaldover, D. Ragland, C-Y Chan, D. Marco, "Measuring Intersection Turning Behaviors to Supprot Design of an Intersection Collision Warning System, " *Proceedings of the 2004 Intelligent Transportation System World Congress* in Nagoya, Japan, October 2004.

- D. Ragland, I. Banerjee, S.E. Shladover, J. Misener, C-Y Chan, "Impact of Pedestrian Presence on Movement of Left-Turning Vehicles: Method, Preliminary Results & Possible Use in Intersection Decision Support," 2005 TRB Annual Meeting, Paper No. 05-2199.

- C-Y Chan, B. Bougler, "Evaluation of Cooperative Roadside and Vehicle-Based Data Collection for Assessing Intersection Conflicts," IEEE Intelligent Vehicles Symposium 2005, Las Vegas, June 2005.

- C-Y Chan, "Analysis of Close Encounters in Left-Turn Maneuvers for Evaluation of Urban Intersection Safety Countermeasures," Scientific Paper, *Proceedings of the 2005 Intelligent Transportation System World Congress* in San Francisco, November 2005.

- A. Sharafsaleh, C-Y Chan, "Experimental Evaluation of Commercially-off-the-shelf Sensors for Intersection Decision Support Systems," Technical Paper, *Proceedings of the 2005 Intelligent Transportation System World Congress* in San Francisco, November 2005.

- D. Ragland, S. Arroyo, S.E. Shladover, J. Misener, C-Y Chan, "Gap Acceptance for Vehicles Turning Left Across Oncoming Traffic: Implications for Intersection Decision Support," 2006 TRB Annual Meeting, Paper No. 06-2696.

- C-Y Chan, "Observation of Left-Turn Conflicts at Signalized Intersections and Design of Gap-Assistance Systems in Urban Environment," 2006 TRB Annual Meeting, Paper No. 06-0119.

- C-Y Chan, "Defining Safety Performance Measures of Driver-Assistance Systems for Intersection Left-Turn Conflicts ," IEEE Intelligent Vehicles Symposium 2006, Tokyo, Japan, June 2006.

- C-Y Chan, "An Investigation of Traffic Characteristics and Their Effects on Drivers Behaviors in Intersection Crossing-Path Maneuvers," IEEE Intelligent Vehicles Symposium 2007, Istanbul, Turkey, June 2007.

Technical Reports

- C-Y. Chan, et al., "California Intersection Decision Support: A Systems Approach to Achieve Nationally Interoperable Solutions," *California PATH Research Report, UCB-ITS-PRR-2005-11,* April 2005.

- J. A. Misener, et al., "California Intersection Decision Support: A Systems Approach to Achieve Nationally Interoperable Solutions II," *California PATH Research Report, UCB-ITS-PRR-2007-1,* January 2007.

II. Subject Area: Collision Warning Systems
Research Focus: Transit Bus and Pedestrian Applications

Refereed Conference and Symposium Proceedings

- C-Y. Chan, X. Wang, W-B. Zhang, "Scenario Parsing in Transit Bus Operations for Experimental Frontal Collision Warning Systems, " *Proceedings of the IEEE Intelligent Vehicles Symposium 2001*, Tokyo Japan, May 2001.

- C-Y. Chan, K. Zhou, X. Wang, W-B. Zhang, "Studies of Accident Scenarios for Transit Bus Frontal Collisions, "Proceedings *of the Eleventh Annual Meeting on Intelligent Transportation Systems,* Miami, Florida, June 2001.

- X. Wang, W-B. Zhang, S. Johnston, D. Empey, C-Y. Chan, "Integrated Multi-Sensor System – A Tool for Investigating Approaches for Transit Frontal Collision Mitigation, " *Proceedings of 2001 World Congress on Intelligent Transportation Systems,* Sydney, Australia, October 2001.

- K. Zhou, X. Wang, M. Tomizuka, W-B. Zhang, C-Y. Chan, "A New Maneuvering Target Tracking Algorithm with Input Estimation, " *Proceedings of the 2002 American Control Conference*, Anchorage, Alaska, June 2002.

- Kun Zhou, Wei-Bin Zhang, Gary Glenn, Xiqin Wang, and Ching-Yao Chan, "Studies of Accident and Cost Data for Transit Buses," *Proceedings of the 2004 Intelligent Transportation System World Congress* in Nagoya, Japan, October 2004.

- Fanping Bu, C-Y Chan, "Pedestrian Detection in Transit Bus Application: Sensing Technologies and Safety Solutions," IEEE Intelligent Vehicles Symposium 2005, Las Vegas, June 2005.

- Fanping Bu, C-Y Chan, D. Marco, W-B Zhang, "Pedestrian Detection for Transit Bus Platforms – Near Range Sensing Applications," Technical Paper, *Proceedings of the 2005 Intelligent Transportation System World Congress,* San Francisco, November 2005.

- C-Y Chan, Fanping Bu, "Vehicle-Infrastructure Integrated Approach for Pedestrian Detection: Feasibility Study Based on Experimental Vehicle Platforms," 2006 TRB Annual Meeting, Paper No. 06-0118.

Technical Reports

- X. Wang, J. Chang, C-Y. Chan, et al., "Development of Requirement Specifications for Transit Frontal Collision Warning System" *California PATH Research Report, UCB-ITS-PRR-2003-29,* November 2003.

- C-Y Chan, Fanping Bu, S. Shladover, "Experimental Vehicle Platform for Pedestrian Detection," *California PATH Research Report, UCB-ITS-PRR-2006-16,* August 2006.

III. Subject Area: Transportation Systems
Research Focus: Risk Assessment and Safety Evaluation

Refereed Conference and Symposium Proceedings

- A.C. Segal, C-Y. Chan, J.B. Michael, " Fault Tree Analysis of Advanced Vehicle Control Systems," *Proceedings of the 1997 Annual Meeting of ITS America*, Seventh Annual Meeting, Washington, D.C., June 1997.

- M. El Koursi, C-Y. Chan, W-B. Zhang, "Preliminary Hazard Analysis: A Case Study of Advanced Vehicle Control and Safety Systems," *Proceedings of the 1999 IEEE Systems, Man, and Cybernetics Conference*, Tokyo, Japan, October 1999.

- M. El Koursi, C-Y. Chan, W-B. Zhang, "Preliminary Safety Analysis of Frontal Collision Avoidance Systems, " *Proceedings of 2000 IEEE Intelligent Transportation Systems Conference*, Detroit, Michigan, October 2000.

- M. El Koursi, E. Lemaire, C-Y. Chan, W-B. Zhang, "Functional Analysis of Frontal Collision Avoidance Systems," *Proceedings of 2001 World Congress on Intelligent Transportation Systems,* Sydney, Australia, October 2001.

Technical Reports

- J.B. Michael, C-Y. Chan, A.C. Segal, "Safety Evaluation of Vehicle-Following Operations by Fault Tree and Sensitivity Analysis" Final Report MOU 253, 97-C38, December 1997.

- C-Y. Chan, "Safety Evaluation of Vehicle Following Operations by Fault Tree and Sensitivity Analysis," *California PATH Research Report, UCB-ITS-PRR-2000-18,* September 2000.

- C-Y. Chan, W-B. Zhang, M. El Koursi, E. Lemaire, "Safety Assessment of Advanced Vehicle Control and Safety Systems (AVCSS) – A Case Study, " *California PATH Research Report, UCB-ITS-PRR-2001-30,* October 2001.

- C-Y. Chan, W-B. Zhang, "Safety Assessment of Advanced Vehicle Control and Safety Systems (AVCSS), " *California PATH Research Report, UCB-ITS-PRR-2005-19,* April 2005.

IV. Subject Area: Vehicle Dynamics and Control
Research Focus: Vehicle Dynamics and Handling under Impacts

Archival Journal Publication

- C-Y. Chan, H-S. Tan, "Feasibility Analysis of Steering Control as a Driver-Assistance Function in Collision Situations, " *IEEE Transactions on Intelligent Transportation Systems*, Vol. 2, No. 1, pp. 1-9, March 2001.

Refereed Conference and Symposium Proceedings

- C-Y. Chan, "Open-Loop Trajectory Design for Longitudinal Vehicle Maneuvers: Case Studies with Design Constraints," *Proceedings of 1995 American Control Conference*, June 1995.

- C-Y. Chan, "Studies of Collisions in Vehicle Following Operation by Two-Dimensional Impact Simulations," *Proceedings of the 1996 Annual Meeting of ITS America*, Sixth Annual Meeting, Houston, Texas, April 1996.

- C-Y. Chan, "Collision Analysis of Vehicle Following Operations in Automated Highway Systems," *Proceedings of the Third World Congress of Intelligent Transport Systems*, Orlando, Florida, October 1996.

- C-Y. Chan, "Simulation of Vehicle Trajectories and Maneuvers in Vehicle-Following Collisions," *Proceedings of the 1997 Annual Meeting of ITS America*, Seventh Annual Meeting, Washington, D.C., June 1997.

- C-Y. Chan, H-S. Tan, "Automated Steering Control in Vehicle-Following Collisions," *Proceedings of the 1999 Annual Meeting of ITS America*, Ninth Annual Meeting, Washington, D.C., April 1999.

- C-Y. Chan, H-S. Tan, "Lane-Tracking Vehicle Control in Collision Situations, " *Proceedings of the 1999 American Control Conference*, San Diego, California, June 1999.

- C-Y. Chan, H-S Tan, "Application of a Robust Steering Controller in Emergency Situations," *Proceedings of the 1999 IEEE/IEEJ/JSAI Conference on Intelligent Transportation Systems*, Tokyo, Japan, October 1999.

Technical Reports

- C-Y. Chan, "Collision Analysis of Vehicle Following Operations by Two-Dimensional Simulation Model: Part I - Effects of Operational Variables," *California PATH Research Report, UCB-ITS-PRR-97-4*, January 1997.

- C-Y. Chan, "Collision Analysis of Vehicle Following Operations by Two-Dimensional Simulation Model: Part II - Vehicle Trajectories with Follow-Up Maneuvers," *California PATH Research Report, UCB-ITS-PRR-97-5*, January 1997.

- C-Y. Chan, "Studies of Vehicle Collisions by EDSMAC," *California PATH Research Report, UCB-ITS-PRR-98-11,* March 1998.

- C-Y. Chan, "Studies of Vehicle Collisions by EDSMAC - A Documentation of Simulation Codes: SMAC (Simulation Model of Automobile Collision) Update 1," *California PATH Working Paper, UCB-ITS-PWP-99-4,* March 1999.

- B. Hongola, C-Y. Chan, "Studies of Vehicle Collisions by EDSMAC: SMAC (Simulation Model of Automobile Collision) and CAMMA (Animation)," *California PATH Working Paper, UCB-ITS-PWP-99-10,* July 1999.

- C-Y. Chan, "Studies of Collisions and Control Strategies in Vehicle Following Operations by Two-Dimensional Impact Simulations," *California PATH Research Report, UCB-ITS-PRR-2000-17,* September 2000.

V. Subject Area: Automotive Restraint Systems
Research Focus: Sensing for Air Bag Systems

Book

- C-Y. Chan, "Fundamental of Crash Sensing for Automotive Air Bag Systems," Society of Automotive and Aerospace Engineers (SAE), February 2000, ISBN 0-7680-0499-3.

Book Chapter

- C-Y. Chan, "Occupant Restraint Systems," McGraw-Hill 2006 Yearbook of Science and Technology, December 2005, ISBN: 0-0714-6205-8.

Archival Journal Publications

- C-Y. Chan, "Sensor Design for Automobile Air Bag Systems: Design Methods and Criteria," *ASME Advances in Design Automation - 1992*, Vol. 44-2, pp. 327-334.

- C-Y. Chan, "On the Detection of Vehicular Crashes – System Characteristics and Architecture, " *IEEE Transactions on Vehicular Technology*, Vol. 51, No. 1, pp. 180-193, January 2002.

- C-Y. Chan, "A Treatise on Crash Sensing for Automotive Air Bag Systems, " *IEEE/ASME Transactions on Mechatronics,* Vol. 7, No. 2, pp. 220-234, June 2002.

- C-Y. Chan, "Trends in Crash Detection and Occupant Restraint Technology," Proceedings of The IEEE, Volume 95, No. 2, Special Issue on Advanced Automobile Technology, pp. 388-396, February 2007.

Refereed Conference and Symposium Proceedings

- C-Y. Chan, F. Shokoohi, "Sensing Problems in Automotive Occupant Restraint Systems," *Proceedings of 1995 IEEE Symposium on Intelligent Vehicles*, Detroit, Michigan, September 1995.

- C-Y. Chan, "Integration of Sensor Technologies for Intelligent Occupant Restraint Systems in Automobiles," *Proceedings of the Second World Congress on Intelligent Transpiration Systems*, Yokohama, Japan, November 1995.

- C-Y. Chan, "Evolution and Trends in Vehicle Safety Systems for Occupant Protection," *Proceedings of the Second Asian Pacific Transportation Development Conference,* San Francisco, California, February 1997.

Technical Reports

- C-Y. Chan and D. Breed, "A Generalized Vehicle Crash Sensor Computer Model-Technical Manual & User's Manual," Technical report ATI-102-1, National Highway Traffic Safety Administration, Contract No. DOT-NH22-89-C-07293, July 1990.

VI. Subject Area: Technology for Transportation
Research Focus: Technology Requirements, Magnetic Sensing Systems, Incident Handling

Archival Journal Publications

- C-Y. Chan, B. Litkouhi, "Technical Challenges in the Development of AHS," *Journal of Intelligent Transportation Systems,* April 1998, Vol. 4, pp. 81-100.

- C-Y. Chan, "Magnetic Sensing as a Position Reference System for Ground Vehicle Control, " *IEEE Transactions on Instrumentation and Measurement*, Vol. 51, No. 1, pp. 43-52, February 2002.

Refereed Conference and Symposium Proceedings

- C-Y. Chan, B. Bougler, D. Nelson, P. Kretz, H-S. Tan, W-B. Zhang, "Characterization of Magnetic Tape and Magnetic Markers as a Position Sensing System for Vehicle Guidance and Control, " *Proceedings of the 2000 American Control Conference*, Chicago, Illinois, June 2000.

- W-B. Zhang, Y. Omote, I. Tanaka, S. Takahashi, C-Y. Chan, H-S. Tan," Field Operational Tests of Magnetic Marker Reference/Sensing System for Vehicle Lateral Guidance and Control," *Proceedings of the 2001 World Congress on Intelligent Transportation Systems*, Sydney, Australia, October 2001.

- C-Y. Chan, Ray Su, Aaron Steinfeld, "A Mobile Platform for Roadway Incident Documentation, " *Proceedings of the 2002 World Congress on Intelligent Transportation Systems*, Chicago, Illinois, October 2002.

- W-B Zhang et al., "Benefits of Electronic Guidance for Bus Rapid Transit," *Proceedings of the 2004 Intelligent Transportation System World Congress* in Nagoya, Japan, October 2004.

Technical Reports

- C-Y. Chan, "System Performance and Test Specifications - Advanced Vehicle Control Systems, Vehicle-Follower Longitudinal Control Technologies," Project Report 65V313-001A, May 1995.

- C-Y. Chan, "A System Review of Magnetic Sensing System for Ground Vehicle Control and Guidance, " *California PATH Research Report, UCB-ITS-PRR-2002-20,* May 2002.

- C-Y. Chan, H-S. Tan, "Evaluation of Magnetic Markers as a Position Reference System for Ground Vehicle Guidance and Control," *California PATH Research Report, UCB-ITS-PRR-2003-5,* May 2003.

- C-Y. Chan, Ray Su, "A Mobile Platform for Roadway Incident Documentation, " *California PATH Research Report, UCB-ITS-PRR-2004-2,* January 2004.

- C-Y. Chan, Ray Su, "A Software Application of Photogrammetry Techniques in Reconstructing Incident Scenes," *California PATH Research Report, UCB-ITS-PRR-2004-3,* January 2004.

- C-Y. Chan, T. Liang, J. Ko, "Expedited Crash Investigation - With Use of Technologies for Documentation and Processing," *California PATH Research Report, UCB-ITS-PRR-2007-18,* November 2007.

- W-B Zhang, et al., "Lane Assist Systems for Bus Rapid Transit, Volume II: Needs and Requirements," *California PATH Research Report, UCB-ITS-PRR-2007-22,* November 2007.

VII. Subject Area: Mechanical System Design
Research Focus: Mechanism Synthesis, Design Optimization

Archival Journals Publications

- C-Y. Chan and A. Pisano, "Optimal Valve Lift Curve Design of Valve Train Cam Systems," ASME Design Automation Conference, Sept. 1987; ASME "*Advances in Design Automation - 1987*," Vol. 10-1, pp. 123-130.

- C-Y. Chan and A. Pisano, "Dynamic Model of a Finger-Follower Cam System with a Fluctuating Rocker-Arm Ratio," ASME *Journal of Mechanisms, Transmissions, and Automation in Design,* Vol. 109, No. 3, Sept. 1987, pp. 556-565.

- C-Y. Chan and A. Pisano, "On the Synthesis of Cams with Irregular Followers," ASME *Journal of Mechanical Design,* Vol. 112, No. 2, June 1990, pp. 36-41.

Dissertation and Thesis

- C-Y. Chan, "Optimal Synthesis of Automotive Finger-Follower Cam Systems," Ph.D. Dissertation, University of California at Berkeley, Feb. 1988.

- C-Y. Chan, "Dynamic Modeling and Simulation of Cam Mechanism," Master of Science Thesis, University of California at Berkeley, June 1985.

VIII. Highway Network Safety Evaluation
Research Focus: Collision Concentration and Safety Issues in High-Occupancy Lane, Ramps

Refereed Conference Papers

- K. Chung, C-Y Chan, et al., "HOV Lane Configurations and Collision Distribution on Freeway Lanes – An Investigation of Historical Collision Data in California, " 2007 TRB Annual Meeting, Paper No. 07-3276.

- K. Jang, et al., "Comparison of Collisions on HOV Facilities with Limited and Continuous Access During Peak Hours," 2008 TRB Annual Meeting, Paper No. 08-2807.

- T. Hwang, et al., "Identification of High Collision Concentration Locations under Wet Weather Conditions, " 2008 TRB Annual Meeting, Paper No. 08-2776.