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Tansel Yucelen

Curriculum Vitæ

Summary

Tansel Yucelen was born in Istanbul, Turkey, and is a **Research Faculty** in the Schools of Aerospace Engineering and Electrical and Computer Engineering at the Georgia Institute of Technology, Atlanta, Georgia, since December 2011.

He received the Bachelor of Science degree in **Control Engineering** from Istanbul Technical University, Istanbul, Turkey, in June 2006, the Master of Science degree in **Electrical and Computer Engineering** from Southern Illinois University, Carbondale, Illinois, in May 2008, and the Doctor of Philosophy degree in **Aerospace Engineering** from Georgia Institute of Technology in May 2012.

His research falls into **dynamical systems and aerospace controls** with research specializations in:

- Robust adaptive control of safety-critical autonomous systems
- Resilient cooperative control of networked multivehicle systems
- Distributed estimation and control of large-scale interconnected systems
- Reinforcement learning and biologically-inspired control applications to aerial robotics

He has authored or co-authored more than 90 archival journal and conference publications in these areas.

Education

8/2008–12/2011 **Doctor of Philosophy**, *Georgia Institute of Technology*, Atlanta, GA 30332, USA.
(Degree awarded on **5/2012** with a GPA of **4.0/4.0**)

Major Aerospace Engineering

Minor Mathematics

Dissertation Advances in Adaptive Control Theory: Gradient- and Derivative-Free Approaches

Advisor Anthony J. Calise, Professor

8/2006–5/2008 **Master of Science**, *Southern Illinois University*, Carbondale, IL 62901, USA.
(Degree awarded on **5/2008** with a GPA of **4.0/4.0**)

Major Electrical and Computer Engineering

Thesis Real-Time \mathcal{H}_∞ Approach for Robust Optimal Control

Advisor Farzad Pourboghrat, Professor

9/2002–6/2006 **Bachelor of Science**, *Istanbul Technical University*, Maslak, Istanbul 34469, Turkey.
(Degree awarded on **6/2006** with a GPA of **3.6/4.0** and a rank of **4/50 – high honors**)

Major Control Engineering

Minor Electrical Engineering

Project Analysis of Siemens Process Control System 7 Software with Applications

Advisor Salman Kurtulan, Associate Professor

Professional Experience

12/2011–8/2013 **Research Faculty**, School of Aerospace Engineering (12/2011–8/2013) and School of Electrical and Computer Engineering (2/2013–8/2013), Georgia Institute of Technology, Atlanta, GA, USA.

Projects:

- *Game theoretic learning for distributed autonomous collaboration*, supported by *ONR* (PI: Jeff S. Shamma; Co-Is: Munther Dahleh, Emilio Frazzoli, Maria-Florina Balcan, and H. Peyton Young).
- *Validation elements for loss-of-control recovery operations*, supported by *NASA Langley Research Center* under the Vehicle Systems Safety Technologies (VSSST) program (PI: Vitali Volovoi; Co-Is: Eric Feron, Eric N. Johnson, Wassim M. Haddad, Amy Pritchett, and Karen Feigh).
- *Support of infrastructure monitoring robot*, supported by *NIST* (PI: Eric Johnson; Co-I: Helen Greiner).

Proposals:

- *Validation elements for loss-of-control recovery operations* (accepted)
 - *Investigators*: Vitali Volovoi (PI), Eric Feron, Eric Johnson, Wassim Haddad, Amy Pritchett, and Karen Feigh (**Tansel Yucelen** partially contributed)
 - *Sponsor*: NASA Langley RC (Vehicle Systems Safety Technologies Program)

Thesis Supervised:

- Simon Schatz, *Constrained adaptation with transient and steady-state performance guarantees*, Technical University of Munich, Master of Science, 2012.

Developments:

- Developed an *impulsive control and guidance protocol* for multiagent networks in order to overcome fundamental limitations of linear network controllers such that agents can achieve their system-level objectives while minimizing their power consumption and preserving connectedness.
- Developed a *consensus and formation control architecture* for multiagent systems under persistent disturbances. Specifically, the proposed architecture combines an existing consensus (or formation) algorithm with a new controller. The new controller has an integral action that produces a control input based on an error signal locally projected onto the column space of the graph Laplacian. This action allows agents to achieve consensus or a predetermined formation objective under constant or time-varying disturbances.
- Developed a *cooperative control architecture* for high-order multivehicle systems having non-identical nonlinear uncertain dynamics. For each vehicle, the proposed methodology consists of a local cooperative controller and a vehicle-level controller. The former controller receives the relative output measurements of the neighboring vehicles in order to solve a containment problem formulated on a leader-follower framework. In particular, the leaders generate a trajectory in which the vehicles (followers) converge to the convex hull formed by those of the leaders. The latter controller receives the internal state measurements for suppressing the nonlinear uncertain dynamics of the vehicle by using a decentralized robust adaptive control approach. The interaction topology between vehicles is described by undirected graphs and extensions to directed graphs are further discussed.

- Developed a *command governor architecture* for robust adaptive control of nonlinear uncertain dynamical systems. The proposed command governor is a linear dynamical system which adjusts the trajectories of a given command in order to follow an ideal reference system both in transient time and steady-state. It is shown that by properly choosing the design parameter of the command governor, the controlled nonlinear uncertain dynamical system approximates a Hurwitz linear time-invariant dynamical system with \mathcal{L}_∞ input-output signals. This provides a systematic framework for verification and validation of adaptive control systems and allows to achieve fast and robust adaptation with predictable transient and steady-state system response.
- Extended *command governor architecture* for uncertain systems with state constraints.
- Developed an adaptive control architecture that uses *the low frequency uncertain dynamical system content* for transient and steady-state performance guarantees. The proposed framework involves a new and novel controller architecture involving a modification term in the update law. Specifically, this modification term filters out the high-frequency content contained in the update law with preserving asymptotic stability of the system error dynamics. This framework can be used in a complimentary way with many other approaches to adaptive control.
- Developed a *model reference robust control architecture* for uncertain linear dynamical systems. It is shown that if a priori knowledge of a conservative upper bound on the unknown ideal weight matrix is available, then it is possible not only to stabilize the uncertain dynamical system but also to achieve a guaranteed performance.
- Collaborated in the development of a *concurrent learning adaptive control architecture* for uncertain linear dynamical systems. This approach uses recorded and current data concurrently for adaptation, and it is shown that the error dynamics are exponentially stable.

Courses Taught:

- *Avionics Integration* (AE4580), Georgia Institute of Technology, Spring 2012. Filled in as substitute lecturer (5 lectures).
- *Advanced Flight Dynamics* (AE6520), Georgia Institute of Technology, Fall 2012. Filled in as substitute lecturer (6 lectures).
- *Kalman Filtering* (AE6505), Georgia Institute of Technology, Spring 2013. Filled in as substitute lecturer (1 lecture).
- *Advances in Model Reference Adaptive Control: Theory and Applications*, IEEE Conference on Decision and Control, December 2011. Jointly organized and taught by A. J. Calise, E. N. Johnson, **T. Yucelen**, and G. Chowdhary (1 day workshop).
- *Advances in Adaptive Control: Theory and Applications*, AIAA Guidance, Navigation, and Control Conference, August 2012. Jointly organized and taught by **T. Yucelen**, E. N. Johnson, A. J. Calise, and G. Chowdhary (2 day continuing education course).

8/2008–12/2011 **Graduate Research Assistant**, *School of Aerospace Engineering, Georgia Institute of Technology*, Atlanta, GA, USA.

Projects:

- *Development of LMI-based analysis tools for learning algorithms*, supported by *NASA Langley Research Center* under the Integrated Resilient Aircraft Control (IRAC) program (PI: Anthony J. Calise; Co-Is: Bong-Jun Yang and Jong-Yeob Shin).
- *Flight validation of metrics-based adaptive control methods*, supported by *NASA Langley Research Center* under the Integrated Resilient Aircraft Control (IRAC) program (PI: Eric Johnson; Co-Is: Anthony J. Calise and Bong-Jun Yang).

- *Adaptive vorticity control enabled flight*, supported by *United States Air Force* under the Multidisciplinary Research Initiative (MURI) program (MURI Team: Ari Glezer, Mark Allen, Eric Johnson, Anthony J. Calise, James McMichael, David E. Parekh, Anthony Leonard, Arne Pearlstein, Robert Moser).

Developments:

- Developed *robust adaptive control architecture* for disturbance rejection and uncertainty suppression with transient and steady-state performance guarantees. Specifically, the proposed framework allows for fast adaptation without hindering system robustness. In particular, it is proven that the governing tracking closed-loop system error equation approximates a Hurwitz linear time-invariant dynamical system with \mathcal{L}_∞ input-output signals. This key feature of the framework allows for its robust stability analysis using \mathcal{L}_1 system theory.
- Developed *output feedback adaptive stabilization and command following architecture* for minimum phase dynamical systems with unmatched uncertainties. The approach is based on a nonminimal state space realization that generates an expanded set of states using the filtered inputs and filtered outputs and their derivatives of the original systems. In particular, an adaptive controller is constructed based on the nonminimal realization and is shown to be effective for multivariable dynamical systems with unmatched uncertainties and unstable dynamics.
- Extended *output feedback adaptive stabilization and command following architecture* for uncertain minimum phase dynamical systems with unmatched disturbances.
- Developed *derivative-free adaptive control architecture* for uncertain dynamical systems, without assuming the existence of constant ideal weights. The objective is to achieve fast adaptation and smooth error transient characteristics, particularly for systems that can undergo a sudden change in dynamics. Transient and steady-state performance is shown to be a priori guaranteed by performing an analysis using a Lyapunov-Krasovskii functional.
- Extended *derivative-free adaptive control architecture* for dynamical systems with uncertainty in control effectiveness and limited state information.
- Extended *derivative-free adaptive control architecture* for dynamical systems with unmatched uncertainty and limited state information.
- Extended *derivative-free adaptive control architecture* for large-scale interconnected systems with matched and unmatched time-varying uncertainties and interconnections.
- Collaborated in the development of a *parameter-dependent Riccati equation approach* for output feedback adaptive control of uncertain dynamical systems. This approach augments a nominal, fixed-gain, state observer-based output feedback control law. Although the formulation is in the setting of model reference adaptive control, the realization of the adaptive controller does not require implementation of the reference model. In this regard, the complexity of the proposed approach is far less than that of other methods.
- Developed *Kalman filter modification approach* for adaptive control of uncertain dynamical systems. This approach leads to alternative forms for well-known modification terms with better conditioning.
- Developed *Kalman filter-based adaptive control architecture* for uncertain dynamical systems. This architecture results in an optimal time-varying adaptation gain that allows the achievement of given performance criteria without excessive adaptation gain tuning, without incurring high frequency oscillations in the system response, and with smaller tracking errors.
- Collaborated in the development of *adaptive loop recovery modification* for adaptive control of uncertain dynamical systems that allows the approximate retention of reference model loop properties such as relative stability margins.
- Collaborated in the development of *\mathcal{K} modification approach* for adaptive control of uncertain dynamical systems. This approach provides a frequency-dependent filtering effect to improve adaptive system performance such that smooth transient responses can be obtained.

- Collaborated in the development of an LMI-based analysis for approximating the stability margins of an adaptively controlled uncertain dynamical system in the presence of matched and unmatched uncertainties.
- Developed an adaptive control architecture for uncertain dynamical systems with input actuator constraints.
- Design, development, and implementation of *derivative-free adaptive control architecture* for the *NASA Langley Research Center* airborne subscale transport aircraft research (AirSTAR) flight test vehicle.
- Design, development, and implementation of *derivative-free adaptive control*, *Kalman filter modification*, and *Kalman filter-based adaptive control architectures* for the *Georgia Institute of Technology* twin engine subscale transport aircraft research (TwinSTAR) flight test vehicle.

6/2011–12/2011 **Graduate Teaching Assistant**, *School of Aerospace Engineering, Georgia Institute of Technology*, Atlanta, GA, USA.

- *Control System Design Laboratory* (AE 4525). Taught experiments and lectures, provided grading and homework support.
- *Flight Dynamics* (AE 3521). Filled in as substitute lecturer (1 lecture), provided grading and homework support.

8/2006–5/2008 **Graduate Research Assistant**, *School of Electrical and Computer Engineering, Southern Illinois University*, Carbondale, IL, USA.

Project:

- *A new hybrid panel for active/passive noise blocking in coal mines*, supported by *Illinois Clean Coal Institute* (PI: Farzad Pourboghraat; Co-Is: Morteza Daneshdoost and Ramanarayanan Viswanathan).

Developments:

- Developed *nonminimal state-space realization approach* for continuous-time linear time-invariant uncertain systems that allows one to cast an output feedback control problem as a full-state feedback problem.
- Developed control-oriented *system identification and state estimation algorithms* based on (recursive) least squares, (recursive) Kalman filtering, and (recursive) \mathcal{H}_∞ filtering techniques.
- Developed \mathcal{H}_∞ *control approaches* using linear matrix inequalities-based frameworks for uncertain dynamical systems.
- Developed *adaptive output feedback \mathcal{H}_∞ optimal control architecture* based on a gradient-type approximation algorithm for Riccati matrix equation.
- Developed a *gradient-type neural network approach* for online solution of state-dependent Riccati equations.
- Developed hardware and software, actuator/sensor integration, and controller design for active noise control on an acoustic duct and three dimensional acoustic enclosure.
- Developed hardware and software, actuator/sensor integration, and controller design for active vibration control of flexible structures.

8/2006–5/2007 **Graduate Teaching Assistant**, *School of Electrical and Computer Engineering, Southern Illinois University*, Carbondale, IL, USA.

- *Electric Circuits* (ECE 235). Filled in as substitute lecturer (2 lectures), provided grading and homework support.

- 9/2005–6/2006 **Research Engineer**, *Nokta Industrial Automation Systems*, Mecidiyekoy, Istanbul, Turkey.
- Software development for programmable logic controllers.
 - Efforts support design and implementation of programmable logic controller for controlling a distillation system for *Istanbul Water and Sewerage Management Company* (in collaboration with *Siemens*).
 - Efforts support design and implementation of programmable logic controller for controlling a large-scale steel production process for *Eregli Iron and Steel Works Company* (in collaboration with *Siemens*).
- 9/2004–6/2006 **Undergraduate Research**, *School of Control Engineering, Istanbul Technical University*, Maslak, Istanbul, Turkey.
- Developed a *self-tuning proportional-integral-derivative controller* using the Ziegler Nicholds method for programmable logic controllers.
 - Developed a *proportional-integral-derivative type fuzzy logic controller* for programmable logic controllers for systems with input delays.
 - Developed hardware and software, actuator/sensor integration, and controller design for automation and production processes using programmable logic controllers.

Research Interests

- Theory** Adaptive control; Computational methods; Cooperative control; Decentralized control; Delay systems; Distributed control; Disturbance rejection; Estimation; Fixed-architecture controller synthesis; Fuzzy control; Game theory; \mathcal{H}_2 control; \mathcal{H}_∞ control; Hybrid systems; Linear matrix inequalities; Linear systems; Modeling; Multiobjective mixed-norm controller synthesis; Networked control systems; Neural networks; Nonlinear systems; Optimal Control; Optimization; Performance analysis; Predictive control; Resilient (nonfragile) control; Robust control; Saturation (amplitude, rate, quantization) control; Stability analysis; Time-varying systems; Uncertain systems.
- Application** Active noise control; Active vibration control; Aerospace systems; Automation; Electrical systems; Flexible structures; Flight control; Isolation technology; Large-scale interconnected systems; Manned aerial vehicles; Mechanical systems; Multiagent networks; Power systems; Real-time systems; Robotics; Smart structure control; Unmanned aerial vehicles.

Journal Papers

- Submitted [21] **T. Yucelen**, W. M. Haddad, and E. N. Johnson, “Consensus protocols for networked multiagent systems with a uniformly continuous quasi-resetting architecture,” *International Journal of Control*.
- Submitted [20] **T. Yucelen**, G. De La Torre, and E. N. Johnson, “Improving transient performance of adaptive control architectures using frequency-limited error dynamics,” *IEEE Transactions on Automatic Control*.
- Submitted [19] M. Pakmehr, N. Fitzgerald, **T. Yucelen**, E. Feron, J. S. Shamma, and A. Behbahani, “Gain scheduled model reference adaptive control of gas turbine engines,” *AIAA Journal of Guidance, Dynamics, and Control*.
- Submitted [18] T. Sadikhov, W. M. Haddad, M. A. Demetriou, and **T. Yucelen**, “Adaptive estimation using multiagent network identifiers with undirected and directed graph topologies,” *Systems and Control Letters*.
- Submitted [17] G. De La Torre, **T. Yucelen**, and E. N. Johnson, “A new model reference control architecture: Stability, performance, and robustness,” *International Journal of Robust and Nonlinear Control*.

- Submitted [16] **T. Yucelen** and F. Pourboghrat, “Active noise blocking using non-minimal state-space realization and linear matrix inequalities based \mathcal{H}_∞ control,” *IEEE Transactions on Mechatronics*.
- Accepted [15] G. De La Torre, **T. Yucelen**, and E. N. Johnson, “Hybrid connectivity control of networked multiagent systems,” *IEEE Transactions on Automatic Control*.
- Accepted [14] **T. Yucelen** and W. M. Haddad, “Low-frequency learning and fast adaptation in model reference adaptive control,” *IEEE Transactions on Automatic Control*.
- Accepted [13] **T. Yucelen** and E. N. Johnson, “Control of multivehicle systems in the presence of uncertain dynamics,” *International Journal of Control*.
- Accepted [12] K. Scheper, D. Magree, **T. Yucelen**, G. De La Torre, and E. N. Johnson, “Application of a frequency-limited adaptive control architecture to a quadcopter,” *Advances in Aerospace Guidance, Navigation, and Control* (Editors: Bob Mulder and Ping Chu, *Delft University of Technology*).
- Accepted [11] **T. Yucelen**, B. J. Yang, and A. J. Calise, “Derivative-free decentralized adaptive control of large-scale interconnected uncertain systems,” *Journal of the Astronautical Sciences*.
- 2013 [10] **T. Yucelen** and E. N. Johnson, “A new command governor architecture for transient response shaping,” *International Journal of Adaptive Control and Signal Processing*.
- 2012 [9] **T. Yucelen** and W. M. Haddad, “A robust adaptive control architecture for disturbance rejection and uncertainty suppression with \mathcal{L}_∞ transient and steady-state performance guarantees,” *International Journal of Adaptive Control and Signal Processing*.
- 2012 [8] G. Chowdhary, **T. Yucelen**, M. Muhlegg, and E. N. Johnson, “Concurrent learning adaptive control of linear systems with exponentially convergent bounds,” *International Journal of Adaptive Control and Signal Processing*.
- 2012 [7] **T. Yucelen** and W. M. Haddad, “Output feedback adaptive stabilization and command following for minimum phase dynamical systems with unmatched uncertainties and disturbances,” *International Journal of Control*, Vol. 85, No. 6, pp. 706–721.
- 2012 [6] A. J. Calise and **T. Yucelen**, “Adaptive loop transfer recovery,” *AIAA Journal of Guidance, Control, and Dynamics*, Vol. 35, No. 3, pp. 807–815.
- 2011 [5] **T. Yucelen** and A. J. Calise, “Derivative-free model reference adaptive control,” *AIAA Journal of Guidance, Control, and Dynamics*, Vol. 34, No. 4, pp. 933–950.
- 2010 [4] **T. Yucelen** and A. J. Calise, “Kalman filter modification in adaptive control,” *AIAA Journal of Guidance, Control, and Dynamics*, Vol. 33, No. 2, pp. 426–439.
- 2006 [3] **T. Yucelen**, “Control and dynamical neural networks based inverse kinematics solution to industrial robotic arms,” *Turkish Journal of Industry and Automation*, Vol. 110.
- 2006 [2] **T. Yucelen**, “Self-tuning proportional-integral-derivative control algorithms embedded on a process control system software for programmable logic controllers: Application (Part II),” *Turkish Journal of Industry and Automation*, Vol. 108.
- 2006 [1] **T. Yucelen**, “Self-tuning proportional-integral-derivative control algorithms embedded on a process control system software for programmable logic controllers: Theory (Part I),” *Turkish Journal of Industry and Automation*, Vol. 107.

Conference Papers

- Most presentations are available in electronic format at <http://www.tanselyucelen.com/> or upon request.

- Submitted [78] **T. Yucelen**, G. De La Torre, and E. N. Johnson, “Consensus protocols for networked multiagent systems with relative position and neighboring velocity information,” Conference on Decision and Control, Florence, Italy.

- Submitted [77] M. Pakmehr, **T. Yucelen**, and A. Behbahani, “Adaptive control of systems with gain scheduled reference model,” Conference on Decision and Control, Florence, Italy.
- Submitted [76] G. De La Torre, **T. Yucelen**, and E. N. Johnson, “Hybrid protocols for maintaining connectivity of multiagent systems,” Conference on Decision and Control, Florence, Italy.
- Submitted [75] G. De La Torre, **T. Yucelen**, and E. N. Johnson, “Constrained formation protocols for networked multiagent systems,” International Conference on Unmanned Aircraft Systems, Atlanta, Georgia.
- Submitted [74] **T. Yucelen** and A. J. Calise, “Robustness of a derivative-free adaptive control law in the presence of unmodeled dynamics,” AIAA Guidance, Navigation, and Control Conference, Boston, Massachusetts (**invited paper**).
- Submitted [73] **T. Yucelen** and E. N. Johnson, “Artificial basis functions in adaptive control for transient performance improvement,” AIAA Guidance, Navigation, and Control Conference, Boston, Massachusetts (**invited paper**).
- Submitted [72] R. Modares, F. Lewis, **T. Yucelen**, and G. Chowdhary, “Adaptive optimal control of partially-unknown constrained-input systems using policy iteration with experience replay,” AIAA Guidance, Navigation, and Control Conference, Boston, Massachusetts (**invited paper**).
- Submitted [71] **T. Yucelen**, W. M. Haddad, and E. N. Johnson, “Application of a robust adaptive control architecture to an aeroelastic generic transport model,” AIAA Guidance, Navigation, and Control Conference, Boston, Massachusetts (**invited paper**).
- Submitted [70] **T. Yucelen**, G. De La Torre, and E. N. Johnson, “Scalability in adaptive control,” AIAA Guidance, Navigation, and Control Conference, Boston, Massachusetts (**invited paper**).
- Submitted [69] S. Schatz, **T. Yucelen**, E. N. Johnson, and F. Holzapfel, “Constraint enforcement methods for command governor-based adaptive control of uncertain dynamical systems,” AIAA Guidance, Navigation, and Control Conference, Boston, Massachusetts (**invited paper**).
- Submitted [68] G. De La Torre, **T. Yucelen**, and E. N. Johnson, “Consensus protocols in networked multiagent systems for cluttered and hostile environments,” AIAA Guidance, Navigation, and Control Conference, Boston, Massachusetts.
- Accepted [67] **T. Yucelen**, W. M. Haddad, and E. N. Johnson, “Consensus protocols for networked multiagent systems with a uniformly continuous quasi-resetting architecture,” American Control Conference, Washington, DC.
- Accepted [66] **T. Yucelen**, G. De La Torre, and E. N. Johnson, “Frequency-limited adaptive control architecture for transient response improvement,” American Control Conference, Washington, DC.
- Accepted [65] **T. Yucelen** and W. M. Haddad, “Low-frequency learning and fast adaptation in model reference adaptive control for safety-critical systems,” American Control Conference, Washington, DC.
- Accepted [64] T. Sadikhov, W. M. Haddad, M. A. Demetriou, and **T. Yucelen**, “Adaptive estimation using multiagent network identifiers with undirected and directed graph topologies,” American Control Conference, Washington, DC.
- Accepted [63] G. De La Torre, **T. Yucelen**, and E. N. Johnson, “Command governor-based model reference control,” American Control Conference, Washington, DC.
- Accepted [62] K. Scheper, D. Magree, **T. Yucelen**, G. De La Torre, and E. N. Johnson “Application of a frequency-limited adaptive control architecture to a quadcopter,” European Aerospace Guidance, Navigation, and Control Conference, Delft, Netherlands.
- Accepted [61] S. P. Schatz, **T. Yucelen**, and E. N. Johnson “Constrained adaptive control with transient and steady-state performance guarantees,” European Aerospace Guidance, Navigation, and Control Conference, Delft, Netherlands.
- Accepted [60] G. De La Torre, E. N. Johnson, and **T. Yucelen**, “Model fidelity sensitivity in predictive slung load control,” AHS Annual Forum and Technology Display, Phoenix, AZ.

- Accepted [59] G. De La Torre, E. N. Johnson, and **T. Yucelen**, “Predictive control for aggressive slung load maneuvers,” AHS Unmanned Rotorcraft and Network Centric Operations Specialists Meeting, Scottsdale, AZ.
- 2012 [58] **T. Yucelen** and E. N. Johnson, “Cooperative control of uncertain multivehicle systems,” IEEE Conference on Decision and Control, Maui, HI.
- 2012 [57] **T. Yucelen** and E. N. Johnson, “Design and analysis of a novel robust command governor architecture in adaptive control for shaping the transient system response,” IEEE Conference on Decision and Control, Maui, HI.
- 2012 [56] **T. Yucelen** and W. M. Haddad, “A robust adaptive control architecture for disturbance rejection and uncertainty suppression with \mathcal{L}_∞ transient and steady-state performance guarantees,” IEEE Conference on Decision and Control, Maui, HI.
- 2012 [55] **T. Yucelen** and E. N. Johnson, “Command governor-based adaptive control,” AIAA Guidance, Navigation, and Control Conference, Minneapolis, Minnesota (**invited paper**).
- 2012 [54] **T. Yucelen** and E. N. Johnson, “On achieving predictable adaptive control response for uncertain dynamical systems with large domains of operation,” AIAA Guidance, Navigation, and Control Conference, Minneapolis, Minnesota (**invited paper**).
- 2012 [53] D. Magree, **T. Yucelen**, and E. N. Johnson, “Command governor-based adaptive control of a vertical takeoff and landing aircraft,” AIAA Guidance, Navigation, and Control Conference, Minneapolis, Minnesota (**invited paper**).
- 2012 [52] G. De La Torre, **T. Yucelen**, and E. N. Johnson, “Robust control using command governor,” AIAA Guidance, Navigation, and Control Conference, Minneapolis, Minnesota (**invited paper**).
- 2012 [51] **T. Yucelen** and M. Egerstedt, “Control of multiagent systems under persistent disturbances,” American Control Conference, Montreal, Canada.
- 2011 [50] **T. Yucelen**, B. J. Yang, and A. J. Calise, “Derivative-free decentralized adaptive control of large-scale interconnected uncertain systems,” IEEE Conference on Decision and Control, Orlando, Florida.
- 2011 [49] **T. Yucelen** and A. J. Calise, “Derivative-free output feedback adaptive control,” AIAA Guidance, Navigation, and Control Conference, Portland, Oregon.
- 2011 [48] **T. Yucelen**, K. Kim, A. J. Calise, and N. T. Nguyen, “Derivative-free output feedback adaptive control of an aeroelastic generic transport model,” AIAA Guidance, Navigation, and Control Conference, Portland, Oregon (**invited paper**).
- 2011 [47] **T. Yucelen**, A. J. Calise, and N. T. Nguyen, “Evaluation of derivative-free adaptive controller with optimal control modification,” AIAA Guidance, Navigation, and Control Conference, Portland, Oregon (**invited paper**).
- 2011 [46] K. Kim, **T. Yucelen**, and A. J. Calise, “A Parameter Dependent Riccati Equation Approach to Output Feedback Adaptive Control,” AIAA Guidance, Navigation, and Control Conference, Portland, Oregon (**invited paper**).
- 2011 [45] K. Kim, **T. Yucelen**, A. J. Calise, and N. T. Nguyen, “Adaptive output feedback control for an aeroelastic generic transport model: A parameter dependent Riccati equation approach,” AIAA Guidance, Navigation, and Control Conference, Portland, Oregon (**invited paper**).
- 2011 [44] N. T. Nguyen, I. Tuzcu, **T. Yucelen**, and A. J. Calise, “Longitudinal dynamics and adaptive control application for an aeroelastic generic transport model,” AIAA Atmospheric Flight Mechanics Conference, Portland, Oregon.
- 2011 [43] **T. Yucelen** and A. J. Calise, “Adaptive control with loop transfer recovery: A Kalman filter approach,” American Control Conference, San Francisco, CA.
- 2011 [42] **T. Yucelen** and W. M. Haddad, “Output feedback adaptive stabilization and command following for minimum phase dynamical systems with unmatched uncertainties,” American Control Conference, San Francisco, CA.

- 2011 [41] **T. Yucelen** and W. M. Haddad, “A derivative-free output feedback adaptive control architecture for minimum phase uncertain dynamical systems with unmatched uncertainties,” American Control Conference, San Francisco, CA.
- 2011 [40] A. J. Calise, **T. Yucelen**, and K. Kim, “Several recent advancements in adaptive control,” Greater Philadelphia Regional Aerospace Engineering and Technology Symposium, PA.
- 2010 [39] **T. Yucelen** and A. J. Calise, “Derivative-free model reference adaptive control,” AIAA Guidance, Navigation, and Control Conference, Toronto, Ontario (**invited paper**).
- 2010 [38] **T. Yucelen** and A. J. Calise, “Derivative-free model reference adaptive control of a generic transport model,” AIAA Guidance, Navigation, and Control Conference, Toronto, Ontario (**invited paper**).
- 2010 [37] B. J. Yang, **T. Yucelen**, J. Y. Shin, and A. J. Calise, “An LMI-based analysis for adaptive flight control with unmodeled input dynamics,” AIAA Guidance, Navigation, and Control Conference, Toronto, Ontario (**invited paper**).
- 2010 [36] R. Chandramohan, **T. Yucelen**, A. J. Calise, and E. N. Johnson, “Experimental evaluation of derivative-free model reference adaptive control,” AIAA Guidance, Navigation, and Control Conference, Toronto, Ontario.
- 2010 [35] R. Chandramohan, **T. Yucelen**, A. J. Calise, and E. N. Johnson, “Flight test results for Kalman filter and \mathcal{H}_2 modification in adaptive control,” AIAA Guidance, Navigation, and Control Conference, Toronto, Ontario.
- 2010 [34] K. Kim, **T. Yucelen**, A. J. Calise, and B. J. Yang, “An output feedback model reference adaptive controller,” AIAA Guidance, Navigation, and Control Conference, Toronto, Ontario.
- 2010 [33] K. Kim, **T. Yucelen** and A. J. Calise, “ \mathcal{K} modification based \mathcal{H}_2 adaptive control,” IAA Guidance, Navigation, and Control Conference, Toronto, Ontario.
- 2010 [32] **T. Yucelen**, W. M. Haddad, and A. J. Calise, “Output feedback adaptive command following for nonminimum phase uncertain dynamical systems,” American Control Conference, Baltimore, MD.
- 2010 [31] **T. Yucelen**, W. M. Haddad, and A. J. Calise, “A neuroadaptive control architecture for nonlinear uncertain dynamical systems with amplitude and rate constraints,” American Control Conference, Baltimore, MD.
- 2010 [30] **T. Yucelen**, A. J. Calise, and R. Chandramohan, “ \mathcal{H}_2 adaptive control,” American Control Conference, Baltimore, MD.
- 2010 [29] W. M. Haddad, T. Hayakawa, and **T. Yucelen**, “Adaptive reduced-order dynamic compensation for nonlinear uncertain systems,” American Control Conference, Baltimore, MD.
- 2010 [28] **T. Yucelen**, A. S. Sadahalli, and F. Pourboghrat, “Active noise control in a duct using output feedback robust control technique,” American Control Conference, Baltimore, MD.
- 2010 [27] **T. Yucelen**, A. S. Sadahalli, and F. Pourboghrat, “Online solution of state dependent Riccati equation for nonlinear system stabilization,” American Control Conference, Baltimore, MD.
- 2010 [26] **T. Yucelen** and A. J. Calise, “Adaptive control for the generic transport model: A derivative-free approach,” AIAA Infotech@Aerospace Conference, Atlanta, GA (**invited paper**).
- 2010 [25] R. Chandramohan, **T. Yucelen**, A. J. Calise, G. Chowdhary, and E. N. Johnson, “Experimental results for Kalman filter modification in adaptive control,” AIAA Infotech@Aerospace Conference, Atlanta, GA.
- 2010 [24] B. J. Yang, **T. Yucelen**, J. Y. Shin, and A. J. Calise, “An LMI-based analysis for an adaptive flight control system with an unmatched uncertainty,” AIAA Infotech Conference, Atlanta, GA.
- 2010 [23] K. Kim, **T. Yucelen** and A. J. Calise, “ \mathcal{K} modification in adaptive control,” AIAA Infotech@Aerospace Conference, Atlanta, GA.

- 2009 [22] **T. Yucelen** and A. J. Calise, “Enforcing a linear constraint in adaptive control: A Kalman filter optimization approach,” AIAA Guidance, Navigation, and Control Conference, Chicago, IL (**invited paper**).
- 2009 [21] A. J. Calise, **T. Yucelen**, J. A. Muse, and B. J. Yang, “A loop recovery method for adaptive control,” AIAA Guidance, Navigation, and Control Conference, Chicago, IL (**invited paper**).
- 2009 [20] B. J. Yang, **T. Yucelen**, A. J. Calise, and J. Y. Shin, “LMI-based analysis for stability margins of adaptive flight control,” AIAA Guidance, Navigation, and Control Conference, Chicago, IL (**invited paper**).
- 2009 [19] **T. Yucelen**, A. J. Calise, W. M. Haddad, and K. Y. Volyanskyy, “A comparison of a new neuroadaptive controller architecture with the σ - and e - modification architectures,” AIAA Guidance, Navigation, and Control Conference, Chicago, IL.
- 2009 [18] B. J. Yang, **T. Yucelen**, A. J. Calise, and J. Y. Shin, “LMI-based analysis of adaptive controllers with σ - modification,” American Control Conference, St. Louis, MO.
- 2009 [17] **T. Yucelen** and F. Pourboghtrah, “Active noise blocking: Nonminimal modeling, robust control, and implementation,” American Control Conference, St. Louis, MO.
- 2009 [16] P. V. Medagam, **T. Yucelen**, and F. Pourboghtrah, “Adaptive SDRE based nonlinear sensorless speed control for PMSM drives,” American Control Conference, St. Louis, MO.
- 2008 [15] **T. Yucelen**, “Disturbance learning robust \mathcal{H}_∞ active noise blocking,” International Conference on Control, Automation and Systems, Seoul, Korea.
- 2008 [14] **T. Yucelen**, “Robust output-feedback tracking control of multivariable continuous-time systems in an LMI setting,” United Kingdom Automatic Control Conference, Manchester, UK.
- 2007 [13] **T. Yucelen** and F. Pourboghtrah, “Kalman filter based modeling and constrained \mathcal{H}_∞ optimal control for active noise cancelation,” IEEE Conference on Decision and Control, New Orleans, LA.
- 2007 [12] **T. Yucelen** and F. Pourboghtrah, “Adaptive \mathcal{H}_∞ optimal control strategy based on non-minimal state space realization,” ASME International Mechanical Engineering Congress and Exposition, Seattle, WA.
- 2007 [11] **T. Yucelen**, P. V. Medagam, F. Pourboghtrah, “Nonlinear quadratic optimal control for cascaded multilevel static compensators,” North American Power Symposium, Las Cruces, NM.
- 2007 [10] P. V. Medagam, **T. Yucelen**, and F. Pourboghtrah, “Adaptive SDRE-based nonlinear sensorless speed control for PMSM drives,” North American Power Symposium, Las Cruces, NM.
- 2007 [9] **T. Yucelen**, “Fuzzy \mathcal{H}_∞ active suspension control: Design and application to a nonlinear half-car model,” IFAC Symposium on Advances in Automotive Control, Monterey Coast, CA.
- 2006 [8] **T. Yucelen**, O. Kaymakci, and S. Kurtulan, “Self-tuning proportional-integral-derivative controller using Ziegler Nichols method for programmable logic controllers,” IFAC Workshop on Appl. of Large Scale Industrial Systems, Stockholm - Helsinki, Finland.
- 2006 [7] **T. Yucelen**, “A proportional-integral-derivative type fuzzy logic controller for programmable logic controllers: Design, performance evaluation, and applications on long dead-time systems,” IFAC Workshop on Appl. of Large Scale Industrial Systems, Stockholm - Helsinki, Finland.
- 2006 [6] **T. Yucelen**, O. Kaymakci, and S. Kurtulan, “Adaptive proportional-integral-derivative controller using modified Ziegler Nichols based self-tuning method,” Int. Symposium on Intelligent Manufacturing Systems, Sakarya, Turkey.
- 2006 [5] **T. Yucelen**, “A single adaptive neuron based neuro-fuzzy controller for programmable logic controllers,” Int. Symposium on Intelligent Manufacturing Systems, Sakarya, Turkey.
- 2005 [4] **T. Yucelen**, “An improved approach for smith predictor based controller design,” Fuzzy Logic Applications on Control Systems, Kocaeli, Turkey.

- 2005 [3] **T. Yucelen**, O. Kaymakci, and S. Kurtulan, “Digital proportional-integral-derivative controller design with programmable logic controller for an industrial thermal system,” Automation Symposium, Denizli, Turkey.
- 2005 [2] **T. Yucelen**, “An industrial programmable logic controller based conveyor automation and supervisory control and data acquisition based control,” Graduate Researchers Congress in Engineering, Istanbul, Turkey.
- 2005 [1] **T. Yucelen**, O. Kaymakci, and S. Kurtulan, “Carrying system project with Siemens Simatic S7-200 programmable logic controller,” IFAC Turkish Automation Congress, Istanbul, Turkey.

Workshops

- Submitted [4] G. Chowdhary, **T. Yucelen**, E. N. Johnson, F. Lewis, A. Geramifard, J. How, W. Dixon, and T. Walsh, “Intelligent planning and control: Bringing together adaptive control and reinforcement learning for guaranteeing optimal performance and robustness,” IEEE Conference on Decision and Control, Florence, Italy.
- Accepted [3] **T. Yucelen**, G. Chowdhary, A. J. Calise, E. N. Johnson, F. L. Lewis, and J. How, “Recent advances in adaptive control: Theory and applications,” AIAA Guidance, Navigation, and Control Conference, Boston, MA.
- 2012 [2] **T. Yucelen**, E. N. Johnson, A. J. Calise, and G. Chowdhary, “Recent advances in adaptive control: Theory and applications,” AIAA Guidance, Navigation, and Control Conference, Minneapolis, Minnesota.
- 2011 [1] A. J. Calise, E. Johnson, **T. Yucelen**, G. Chowdhary, and S. Kannan, “Recent advances in model reference adaptive control: Theory and applications,” IEEE Conference on Decision and Control, Orlando, Florida.

Patent Applications

- 2012 [6] **T. Yucelen** and E. N. Johnson, “Command governor-based adaptive control,” Disclosure of Invention, *Georgia Institute of Technology*, Office of Tech. Licensing.
- 2011 [5] **T. Yucelen**, K. Kim, and A. J. Calise, “Systems and methods for derivative-free output feedback adaptive control,” *Georgia Institute of Technology*, Office of Tech. Licensing (**patent pending**, US 13/445,610).
- 2011 [4] K. Kim, **T. Yucelen**, and A. J. Calise, “Systems and methods for parameter dependent Riccati equation approaches to adaptive control,” Disclosure of Invention, *Georgia Institute of Technology*, Office of Tech. Licensing (**patent pending**, US 13/460,663).
- 2010 [3] **T. Yucelen** and A. J. Calise, “A derivative-free model reference adaptive control law,” Disclosure of Invention, *Georgia Institute of Technology*, Office of Tech. Licensing.
- 2009 [2] **T. Yucelen** and A. J. Calise, “A Kalman filter optimization approach to direct adaptive control,” Disclosure of Invention, *Georgia Institute of Technology*, Office of Tech. Licensing.
- 2009 [1] A. J. Calise, **T. Yucelen**, J. A. Muse, and B. -J. Yang, “A loop recovery method for adaptive control,” Disclosure of Invention, *Georgia Institute of Technology*, Office of Tech. Licensing.

Research Reports

- 2011 [2] **T. Yucelen**, B. J. Yang, A. J. Calise, and J. Y. Shin, “Development of robust adaptive laws and LMI-based analysis tools for learning algorithms,” the Integrated Resilient Aircraft Control (IRAC) program, *NASA Langley Research Center*.
- 2009 [1] **T. Yucelen**, B. J. Yang, A. J. Calise, J. Y. Shin, and J. A. Muse, “Development of LMI-based analysis tools for learning algorithms,” the Integrated Resilient Aircraft Control (IRAC) program, *NASA Langley Research Center*.

Talks

- Most talks are available in electronic format at <http://www.tanselyucelen.com/> or upon request.
- 2013 [15] **T. Yucelen**, “Adaptive control of autonomous vehicles: Stability, robustness, and performance,” *University of Illinois at Urbana-Champaign*, Urbana, IL (seminar).
- 2013 [14] **T. Yucelen**, “Uncertain multiagent systems: Consensus and formation problems,” *Georgia Institute of Technology*, Atlanta, GA (seminar).
- 2013 [13] **T. Yucelen**, “High-performance robust adaptive control: From autonomous vehicles toward multivehicle networks,” *University of Kansas*, Lawrence, KS (seminar).
- 2013 [12] **T. Yucelen**, “High-performance robust adaptive control: From autonomous vehicles toward multivehicle networks,” *University of Missouri*, Rolla, MO (seminar).
- 2012 [11] **T. Yucelen**, “Adaptive control for uncertain dynamical systems: Stability, performance, and robustness,” *Massachusetts Institute of Technology*, Cambridge, MA (seminar).
- 2012 [10] **T. Yucelen**, “Adaptive control for uncertain dynamical systems: Stability, performance, and robustness,” *Duke University*, Durham, NC (seminar).
- 2012 [9] **T. Yucelen**, “High performance robust adaptive control for uncertain dynamical systems,” *Georgia Institute of Technology*, Atlanta, GA (seminar).
- 2012 [8] **T. Yucelen**, “High-performance robust adaptive control,” *Seagate*, Shakopee, MN (seminar).
- 2012 [7] **T. Yucelen**, E. N. Johnson, A. J. Calise, and G. Chowdhary, “Recent advances in adaptive control: Theory and applications,” *AIAA Guidance, Navigation, and Control Conference*, Minneapolis, MN (continuing education course).
- 2011 [6] A. J. Calise, E. N. Johnson, **T. Yucelen**, and G. Chowdhary, “Recent advances in model reference adaptive control: Theory and applications,” *IEEE Conference on Decision and Control*, Orlando, FL (workshop).
- 2011 [5] **T. Yucelen**, “Model reference adaptive control: Basics (Part I); Modifications for robust stabilization and command following (Part II),” *Georgia Institute of Technology*, Atlanta, GA (seminar).
- 2011 [4] **T. Yucelen**, “Gradient- and derivative-free approaches to adaptive control,” *Guided Systems Technologies*, Atlanta, GA (seminar).
- 2011 [3] **T. Yucelen**, “Advances in adaptive control theory: Gradient- and derivative-free approaches,” *Georgia Institute of Technology*, Atlanta, GA (defense seminar for the Doctor of Philosophy degree and teleconference).
- 2010 [2] **T. Yucelen** and A. J. Calise, “Flight test results I: Adaptive control of the generic transport model (Part I); Flight test results II: Derivative-free adaptive control for the generic transport model (Part II)” *NASA Marshall Space Flight Center*, Huntsville, AL (teleconference).
- 2009 [1] **T. Yucelen** and A. J. Calise, “Enforcing a linear constraint in adaptive control: A Kalman filter optimization approach,” *NASA Marshall Space Flight Center*, Huntsville, AL (teleconference).

Honors and Awards

- 2011 Robert Wolfe Fellowship; School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA.
- 2010 Finalist of student best paper award; American Control Conference, Baltimore, MD.
- 2010 Session best paper award; American Control Conference, Baltimore, MD.
- 2010 Student travel award; American Control Conference, Baltimore, MD.
- 2010 Finalist of student best paper award; AIAA Infotech@Aerospace Conference, Atlanta, GA.

- 2010 *Derivative-free adaptive control architecture* successfully flight tested on a generic transport model by NASA Langley Research Center: “ ... one that I’ll front note, your controller wins in the ‘least iteration’ category. It is the only controller that didn’t get tuned up based on pilot feedback or the initial flight data ... I don’t know how to quantify it, but when it just works out-of-the-box that’s the level of robustness I think everyone is seeking in adaptive controllers ...” – Dr. David E. Cox (david.e.cox@nasa.gov).
- 2008 Finalist of student best paper award; International Conference on Control, Automation, and Systems, Seoul, Korea.
- 2008 Acceptance to the PhD programs with graduate assistantship; *Georgia Institute of Technology* (accepted), *Texas A & M University*, *University of California Santa Barbara*, *Ohio State University*, *Rensselaer Polytechnic Institute*, *University of Florida*, *University of Minnesota*, *North Carolina State University*.
- 2006 Bachelor of Science High Honors Student; *Istanbul Technical University*, Maslak, Istanbul, Turkey – Prof. Erkin Nasuf (nasuf@itu.edu.tr) and Prof. Leyla Goren (leyla.goren@itu.edu.tr).
- 2006 Bachelor of Science Outstanding Student; for being the only undergraduate student to have participated in fourteen academic publications, Department of Control Engineering, *Istanbul Technical University*, Istanbul, Turkey – Prof. Erkin Nasuf (nasuf@itu.edu.tr) and Prof. Leyla Goren (leyla.goren@itu.edu.tr).
- 2006 TUBITAK Fellowship; *The Scientific and Technological Research Council of Turkey* (TUBITAK), Ankara, Turkey.
- 2002 Ranked in the top 99.9% (among a pool of over 1.6M students in the national student selection exam for universities); *The Student Selection and Placement Center* (OSYM), Ankara, Turkey.
- 2001 Gold Medal in TUBITAK Physics Olympiad (for inventing a device to measure colors in the RGB system using feedback from fiber optic sensors); *The Scientific and Technological Research Council of Turkey* (TUBITAK), Ankara, Turkey.

Activities

Workshop Organizer for:

- IEEE Conference on Decision and Control 2011: *Recent advances in model reference adaptive control: Theory and applications* (**Organizers:** T. Yucelen, G. Chowdhary, E. N. Johnson, and A. J. Calise).
- AIAA Guidance, Navigation, and Control Conference 2012: *Recent advances in adaptive control: Theory and applications* (**Organizers:** T. Yucelen, G. Chowdhary, E. N. Johnson, and A. J. Calise).

Special Issue Organizer for:

- Acta Automatica (September 2013 Issue): *Recent advances in adaptive control and reinforcement learning* (**Editors:** F. L. Lewis and T. Yucelen).

Invited Session Organizer for:

- AIAA Guidance, Navigation, and Control Conference 2012: *Recent advances in adaptive control I, II, III, IV, and V* (**Organizers:** T. Yucelen and E. N. Johnson; **Participants:** F. Lewis, M. Balas, A. Annaswamy, J. How, D. Bernstein, J. Steck, N. Hovakimyan, C. Cao, M. Stefanovic, E. Lavretsky, N. Nguyen, F. Holzapfel, T. VanZweiten, J. Orr, A. D’Amato, F. Peter, M. Leitao, E. Kharisov, K. Vamvoudakis, T. Gibson, G. De La Torre, J. Cao, E. Xargay, G. Chowdhary, N. Kemal Ure, S. Mallikarjunan, B. Nesbitt, D. Magree, M. Muhlegg, J. Vervoorst, X. Wang).

- AIAA Guidance, Navigation, and Control Conference and Infotech@Aerospace Conference 2013: *Advances in adaptive control: Stability, performance, and robustness I, II, III, IV, V, VI, and VII – Dedicated to the contributions of Anthony J. Calise to adaptive flight control* (**Organizers:** T. Yucelan and E. N. Johnson; **Participants:** A. J. Calise, E. Lavretsky, I. Kolmanovsky, J. How, W. Haddad, F. Lewis, D. Bernstein, S. Balakrishnan, F. Holzapfel, M. Balas, M. Stefanovic, A. Annaswamy, W. Dixon, N. Hovakimyan, J. Muse, V. Stepanyan, S. Frost, K. Krishnakumar, N. Nguyen, J. Steck, M. Yu, Y. Rahman, E. Atkins, M. Bichlmeier, E. Xargay, M. Leitao, C. Heise, G. Chowdhary, S. Schatz, M. Muhlegg, W. Fichter, R. Choe, H. Vogel, R. Chandramohan).

Chair/co-chair for:

- AIAA Guidance, Navigation, and Control Conference 2011: *Optimal Control Applications in Flight Control System*.
- American Control Conference 2012: *Multiagent Systems II*.
- AIAA Guidance, Navigation, and Control Conference 2012: *Recent advances in adaptive control I, II, III, IV, and V*.
- IEEE Conference on Decision and Control 2012: *Uncertain Systems II*.
- American Control Conference 2013: *Uncertain Systems II and IV and Control Applications III*.
- AIAA Guidance, Navigation, and Control Conference 2013: *Advances in adaptive control: Stability, performance, and robustness I, II, and IV and Aerospace robotics and unmanned autonomous systems*.

Reviewer for:

- Aerospace Science and Technology
- AIAA Guidance, Navigation, and Control Conference
- AIAA Journal of Guidance, Control, and Dynamics
- American Control Conference
- Asian Journal of Control
- IEEE Control and Decision Conference
- IEEE Multi-Conference on Systems and Control
- IEEE Transactions on Automatic Control
- IEEE Transactions on Control Systems Technology
- IEEE Transactions on Neural Networks
- IET Control Theory and Applications
- International Journal of Control
- International Journal of Robotics and Automation
- Journal of Neural Computing and Applications
- Mathematical Reviews
- Nonlinear Analysis: Hybrid Systems
- Simulation Modeling Theory and Practice
- Systems and Control Letters
- Workshop on Control of Cyber-Physical Systems, Johns Hopkins University, March 2013

Professional Affiliations:

- American Institute of Aeronautics and Astronautics (AIAA)
- Control Systems Society (CSS)

- Institute of Electrical and Electronics Engineers (IEEE)
- Society for Industrial and Applied Mathematics (SIAM)

Technical Expertise

Equipments:

- Siemens S7200/300/400 and Mitsubishi programmable logic controllers
- Siemens supervisory control and data acquisition systems and Simovert drives
- dSpace
- Microchip μ -controller

Environments:

- Matlab/Simulink: LMI lab, Yalmip, SeDuMi, Optimization toolbox, symbolic math toolbox, curve fitting toolbox, control system toolbox, system identification toolbox, fuzzy logic toolbox, robust control toolbox, signal processing toolbox, signal processing blockset, filter design toolbox, data acquisition toolbox, SimMechanics, SimElectronics, Simulink Control Design
- Maple
- Mathematica
- Siemens PCS7
- Mitsubishi GX IEC

Data Acquisition:

- Matlab Real-Time Workshop and dSpace
- Siemens Profibus

Languages:

- Matlab script, C, LAD, STL, CFC, SFC, SCL

Computer-Aided Design:

- Solidworks with Matlab interface

Simulators:

- FlightGear and/or Microsoft Flight Simulator interfaced Matlab/Simulink flight simulator

Collaborators and Coauthors

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- Fitzgerald, Nathan, Dr., *Aurora Flight Sciences Corporation*, Manassas, VA, USA.
- Geramifard, Alborz, Dr., *Massachusetts Institute of Technology*, Boston, MA, USA.
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- Modares, Reza, *University of Texas Arlington*, Arlington, TX, USA.
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- Shamma, Jeff S., Prof., *Georgia Institute of Technology*, Atlanta, GA, USA.
- Shin, Jong-Yeob, Dr., *Gulfstream Aerospace Corporation*, Savannah, GA, USA.
- Tuzcu, Ilhan, Prof., *University of Alabama*, Tuscaloosa, AL, USA.
- Volyanskyy, Kostyantyn Y., Dr., *Georgia Institute of Technology*, Atlanta, GA, USA.
- Yang, Bong-Jun, Dr., *Optimal Synthesis Inc*, Los Altos, CA, USA.