

## ANURADHA M. ANNASWAMY

Director, Active-adaptive Control Laboratory  
Senior Research Scientist, Department of Mechanical Engineering, MIT\*

### EDUCATION

Ph.D.	Yale University (Electrical Engineering) Thesis advisor: K.S. Narendra	1985
M.S.	Yale University (Electrical Engineering)	1980
B.E.	Indian Institute of Science (Electrical Engineering)	1979
B.Sc	Madras University, India (Mathematics)	1976

### EMPLOYMENT

Senior Research Scientist, Mech. Eng., Massachusetts Institute of Technology	2003 - Present
Principal Research Scientist, Mech. Eng., Massachusetts Institute of Technology	1999 - 2003
Associate Professor, Mech. Eng., Massachusetts Institute of Technology	1996 - 1999
Assistant Professor, Mech. Eng., Massachusetts Institute of Technology	1991 - 1996
Assistant Professor, Aero. and Mech. Eng., Boston University	1988 - 1991
Visiting Assistant Professor, Electrical Engineering, Yale University	1988
Postdoctoral Fellow and Lecturer, Electrical Engineering, Yale University	1985-87

### PROFESSIONAL ACTIVITIES AND AWARDS

Member, Board of Governors	2009-12
Panelist, National Science Foundation	1994 - Present
Hans-Fischer Senior Fellow, Institute for Advanced Study, Technical University of Munich, Germany	2008-09
Donald Julius Groen Prize, Institute of Mechanical Engineers	2008
General Chair, American Control Conference	2008
Editorial Board, J. Flow Control	2007 - Present
Program Chair, American Control Conference	2003
Fellow, IEEE	2002
Program Vice Chair, American Control Conference	2000
The Best Presentation Award, American Control Conference	1994
The Best Presentation Award, AIAA GNC Conference	1992
The Presidential Young Investigator Award, NSF	1991-1997
Associate Editor, Automatica	1994-97
Associate Editor, IEEE Trans. Autom. Control	1993-96
The George Axelby Outstanding Paper Award, IEEE Transactions on Automatic Control	1988
IBM postdoctoral fellowship	1987
The Arthur E. Stennard fellowship, Yale University	1980
The Alfred Hay Medal, Indian Institute of Science	1979

### SELECTED PUBLICATIONS (Past five years):

1. J. Choi, A.M. Annaswamy, and F.S. Alvi, "Active Control of Supersonic Impingement Tones Using Steady and Pulsed Microjets," *Experiments in Fluids*, volume 41, pp. 841-855, 2006.
2. C. Cao and A.M. Annaswamy, "A hierarchical discretized-parameter polynomial adaptive estimator for nonlinearly parameterized systems," *International Journal of Control* Vol. 79, No. 8, pp. 831-844, August 2006.

3. D. Sahoo, A.M. Annaswamy, and F.S. Alvi, "Microjets-Based Active Control of Store Trajectory in a Supersonic Cavity Using a Low-Order Model," *AIAA Journal* vol. 45, No. 3, pp. 516-531, 2007.
4. D. Macumber, A.M. Annaswamy, D. Beal, and S. Huyer, "Noise Control Due to the Stator Wake Blade Interaction via Tail Articulation," *IEEE J. Ocean Engineering*, vol. 32, No. 3, pp. 551-564, July 2007.
5. J. Cheong, S-I. Niculescu, A.M. Annaswamy, and M.A. Srinivasan, "Synchronization control for physics-based collaborative virtual environments with shared haptics," *Advanced Robotics*, Volume 21, Number 9, pp. 1001-1029, 2007.
6. A. Morgans and A.M. Annaswamy, "Adaptive control of combustion instabilities for combustion systems with right-half plane zeros," *Combustion Science and Technology*, vol. 180: 1549-1571, 2008.
7. S.Huyer, D. Beal, D. Macumber, and A. Annaswamy, "Unsteady Vortex Flows Produced by Trailing Edge Articulation," *Journal of Fluids Engineering*, Vol.130, No. 3, March 2008.
8. P.R. Bandyopadhyay, S.N. Singh, D. P. Thivierge, A. M. Annaswamy, H A. Leinhos, A. R. Fredette, and D.N. Beal, "Synchronization of Animal-Inspired Multiple High-Lift Fins in an Underwater Vehicle Using Olivo-Cerebellar Dynamics," *IEEE J. Ocean Engineering*, VOL. 33, NO. 4, Oct. 2008.
9. A.M. Annaswamy, J. Choi, and F.S. Alvi, "Pulsed Microjet Control of Supersonic Impinging Jets via Low Frequency Excitation," *Proc. IMechE, Part I: J. Systems and Control Engineering*, Special Issue on Flow Control, vol. 222(I5), pp. 279-296, 2008.
10. H.M. Altay, S. Park, D. Wee, A.M. Annaswamy, and A.F. Ghoniem, "Modeling the dynamic response of a laminar perforated-plate stabilized flame," *Proceedings of the Combustion Institute*, 2009.
11. Y. Yildiz, A.M. Annaswamy, I. Kolmanovsky, and D. Yanakiev, Adaptive Posicast Controller for Time-delay Systems with Relative Degree  $n^* \leq 2$ , *Automatica*, vol. 46, pp. 279-289, Feb. 2010.
12. Z.T. Dydek, A.M. Annaswamy, and E. Lavretsky, "Adaptive Control and the NASA X-15 Program: A Concise History, Lessons Learned, and a Provably Correct Design," *IEEE Control Systems Magazine*, June 2010.
13. H. Voit, R. Schneider, D. Goswami, A.M. Annaswamy, and S. Chakraborty, Optimizing Hierarchical Schedules for Improved Control Performance, *IEEE Symposium on Industrial Embedded Systems*, Trento, Italy, July 2010.
14. C. Ong, A. Annaswamy, I. Kolmanovsky, P. Laing, and D. Reed, An Adaptive Proportional Integral Control of a Urea Selective Catalytic Reduction System Based on System Identification Models, *SAE Int. J. Fuels Lubricant*, 3(1): 625-642, 2010.
15. A. Kiani and A.M. Annaswamy, The effect of a smart meter on congestion and stability in a power market, *IEEE Conference on Decision and Control*, Atlanta, GA, December 2010.
16. Y. Yildiz, A.M. Annaswamy, D. Yanakiev and I. Kolmanovsky, "Spark Ignition Engine Fuel to Air Ratio Control: An Adaptive Control Approach," *Control Engineering Practice*, vol. 18, no. 12, pp. 1369-1378, Dec. 2010.
17. A.M. Annaswamy and S. Hong, "Control of unstable oscillations in flows," *The Control Handbook* (Second Edition), Taylor and Francis, 2010.

18. Y. Yildiz, A.M. Annaswamy, D. Yanakiev and I. Kolmanovsky, "Spark Ignition Engine Idle Speed Control: An Adaptive Control Approach," *IEEE Transactions on Control Systems Technology*, 2011 (in press).