

Curriculum Vitae.

Dr.Seta Bogosyan

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A. Professional Preparation:

Istanbul Technical University, Electrical Engineering	B.S.	1982
Istanbul Technical University, Control and Computer Engineering	M.S.	1984
Istanbul Technical University, Inst. of Science and Technology	PhD	1992

B. Appointments

Jan. 2003 – present, *Associate Professor*, University of Alaska- Fairbanks, Fairbanks, AK.
Oct. 1993-Jan.2003, *Associate Professor*, Istanbul Technical University, Istanbul, Turkey.
Nov. 1992-Oct. 1993, *Assistant Professor*, Istanbul Technical University, Istanbul, Turkey.
May 1991-Nov. 1992, *Lecturer*, Istanbul Technical University, Istanbul, Turkey.
Sept. 1987-May 1991, *Visiting scholar and lecturer*, Center for Robotics Systems in
Microelectronics, University of California at Santa Barbara, CA.

C. Academic Projects as Principal Investigator

1. NSF International Collaboration OIC and NSF CISE, 2006 (granted very recently) -
2. NWACC, Hardware-in-the-Loop Robot Simulator for On-Site and Remote Education, 2005-present.
3. NSF-EPSCOR, Detection and Tracking of Objects in Unknown Environments by Data fusion of MEM multisensors, 2005 – present.
4. NSF- CISE 2004, Remote Research Capability with Hardware-in-the-Loop Simulators for Mechatronic Systems, 2004- present.
5. NATO Collaborative Research Grant, Investigation of the dynamics and control of a highly flexible rotating beam, 1996-1998 (with University of Arizona).
6. ITU Research Foundation, Precision Control of Active Magnetic Bearing Systems with Imbalance Compensation, 2000-.
7. ITU Research Foundation, Design of Modular Control Units with Hardware-In-The-Loop Simulation For Direct Drive Robots And Their Application, 1998-2000.
8. State Planning Establishment; Distributed Cooperation and Coordination in Mobile Robots, 1998-2000.
9. ITU Research Foundation, Sensor Fusion with Environmental Sensing and Localization In Mobile Robots, 1997-2000.
10. “Small Parts Handling Robots” Center for Robotic Systems in Microelectronics, University of California, Santa Barbara, 1987-1991.

D. Industrial Projects

1. Istanbul Transportation Corp., PLC Implementation of Istanbul Metro Vehicle System Fault Logic Functions, 2000.
2. Phoenix Ltd., Development of Automated Gas Stations, 1999.
3. Istanbul Transportation Corp., Analysis of Istanbul Metro Vehicle Electrical Drive Systems, 1999.
4. Istanbul Transportation Corp., Analysis of Istanbul Metro Vehicle System Control Logic, 1999.
5. Istanbul Transportation Corp., Analysis of Istanbul Metro Vehicle System Fault Logic Functions, 1999.
6. Tüm Elektronik Sanayi Sistemleri (TESS); Development of Microcontroller Based System Scales. June 1997 –1998.

E. Courses

- ❖ Digital Control Systems (EE6 71), Fall 2005, -, UAF
- ❖ Engineering Signal Processing (EE 354), spring 2005 - , UAF
- ❖ Robot Modeling and Control (EE 693), spring 2004-, UAF.
- ❖ Modern Control Engineering (EE693), fall 2004-, UAF
- ❖ Fundamentals of Electrical Engineering (ES 307), fall 2003-, UAF.
- ❖ Fundamentals of Automatic Control (EE 471), spring 2003-, UAF.
- ❖ Nonlinear Control Theory: (Graduate course) Department of Control and Computer Engineering, ITU, summer 2000-present.
- ❖ Automatic Control: Department of Electronic Engineering, summer 1995-present.
- ❖ Robot Control: (in English) (Graduate and undergraduate course); Department of Control and Computer Eng., ITU, Sept. 1991-present.
- ❖ Semiconductor Power Electronics, California National University, (Distance education), 1996-present
- ❖ Electrical machinery, California National University, (Distance education), 1995-present
- ❖ Introduction to Robotics: Kinematics and Dynamics (Graduate and undergraduate course) (in English) Department of Control and Computer Engineering, ITU, September 1991-Present.
- ❖ Robot Control: Department of Electrical and Computer Engineering, University of California at Santa Barbara, Spring 1990.
- ❖ Basic Topics in Electrical Engineering: (in English) Department of Control and Computer Engineering, ITU, September 1991-May 1993.
- ❖ Basic Topics in Computer Engineering: (in English) Department of Control and Computer Engineering, ITU, September 1991-May 1993.
- ❖ Electrical Drives; Dept. of Electrical Eng., 1985-1987 (Teaching Assistant).
- ❖ Electrical Drives Laboratory; Dept. of Electrical Eng., 1985-1987
- ❖ Power Electronics; Dept. of Electrical Eng., 1985-1987 (Teaching Assistant).
- ❖ Power Electronics and Electrical Machines Laboratory; Dept. of Electrical Eng., 1985-1987 (Teaching Assistant).

F. Publications

F.1. JOURNAL PUBLICATIONS

INDEXED BY SCIENCE CITATION (WEB OF SCIENCE)

1. M. Barut, **S. Bogosyan**, M. Gokasan, "An EKF Based Estimator for Speed Sensorless Vector Control of Induction Motors," *Electric Power Components & Systems*, formerly *Electric Machines and Power Systems*, Taylor-Francis, Vol. 33 No: 7, pp. 727-744, July 2005.
2. M. Barut, **S. Bogosyan**, M. Gokasan, "Speed Sensorless Direct Torque Control of IMs with Rotor Resistance Estimation," *Energy Conversion and Management*, Elsevier, 46 (3): 335-349 February 2005.
3. V. Bolat, **S. Bogosyan**, M. Gokasan, "Comparison of Fuzzy Logic Based DC Voltage Control Strategies for A Three Phase Parallel Active Filters," *Intelligent Automation and Soft Computing*, An International Journal, Autosoft, vol.12, No: 2, pp 211-226, 2006.
4. H. Temeltas, **S. Bogosyan** and M. Gokasan, "Hardware-In-the-Loop Robot Simulators for On-Site and Remote Education in Robotics," *The International Journal of Engineering Education*, Vol. 22, No. 4, 2006.
5. Gokasan M, **Bogosyan S**, Goering D, "Sliding Mode Based Powertrain Control for Efficiency Improvement in HE-HMMWV," *IEEE, Transaction on Power Electronics*, Volume 21, Issue 3, May 2006 Page(s):779 – 790.
6. M. Barut, **S. Bogosyan** and M. Gokasan, "Speed Sensorless Estimation for Induction Motors Using Extended Kalman Filters," *IEEE Transactions on Industrial Electronics*, (accepted with minor revisions).
7. M. Barut, **S. Bogosyan** and M. Gokasan, "Experimental Evaluation of Braided EKF for $R_s - R_r$ Estimation in Speed Sensorless Control of IMs", *Transactions on Industrial Electronics*, (In review).
8. **S. Bogosyan**, M. Gokasan, D. Goering, "A Model Based Validation and Estimation Approach for Hybrid Serial Electric Vehicles," *IEEE, Transaction on Vehicular Technology*, (In review).
9. **S. Bogosyan**, Barut M. and M. Gokasan, "Braided EKF for Stator and Rotor Resistance Estimation in Speed Sensorless Control of IMs", *IEE Proceedings, Control Theory & Applications*, (In review).
10. M. Barut, **S. Bogosyan** and M. Gokasan, "Switching EKF Technique for Rotor and Stator Resistance Estimation in Speed Sensorless Control of IMs", *Energy Conversion and Management*, Elsevier, (In review).
11. V. Bolat, **S. Bogosyan**, M. Gokasan, "Performance Analysis of Parallel Active Filters For Various Load Types and Power Supply Imperfections," *European Transactions on Electrical Power ETEP*, John Wiley & Sons, (In review).
12. **S. Bogosyan**, L. Goren and M. Gokasan, " H_∞ Model Matching 2 DOF Control with Adaptive Torque Ripple Cancellation for High Performance Direct Drive Systems," *IMEch Journal of Systems and Control Engineering*, (In review).
13. **S. Bogosyan**, M. Barut and M. Gokasan, "Sensorless Control of Induction Motors in Wide Speed Range," *COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, Emerald Group Publishing Limited, (In review).
14. **S. Bogosyan** and M. Gokasan, "A Sliding Mode Based Neural Network for Monitoring Applications: Implementation on a Nuclear Power Plant," *Lecture Notes In Artificial Intelligence*, Springer Verlag, (In review).

OTHER JOURNAL PUBLICATIONS (Engineering Index and Others)

1. V. Bolat, **S. Bogosyan**, M. Gokasan, "Adaptive Fuzzy Logic Control Methods for Parallel Active Filter Applications," ITU Journal, April, pp. 105-115, 2005, (in Turkish).
2. M. Barut, **S. Bogosyan**, and M. Gokasan, "Sensorless Direct Vector Control of Squirrel Cage Induction Motors," ITU Journal, (In publication).
3. M. Barut, **S. Bogosyan**, and M. Gokasan, "Sensorless Low/Zero Speed Control of Induction Motors with EKF Estimation," WSEAS Journal, (In publication).

F.2. CONFERENCE PUBLICATIONS (INDEXED BY INSPEC)

1. M. Barut, **S. Bogosyan**, and M. Gokasan, "Sensorless Low/Zero Speed Control of Induction Motors with EKF Estimation," 6th WSEAS Int. Conf. on Systems Theory And Scientific Computation (ISTASC'06), (Accepted for publication).
2. A. Turan, **S. Bogosyan**, M. Gokasan, "Development of a Client-Server Communication Method for Matlab/Simulink Based Remote Robotics Experiments," IEEE, Montreal, ISIE 2006, (accepted).
3. A. Arisoy, M. Gokasan, **O. S. Bogosyan**, "Tip Position Control of a Flexible-Link Arm," IEEE, IES, the 9th International Workshop on Advanced Motion Control March 27-29, 2006.
4. M. Gokasan, **S. Bogosyan**, D. Goering, "A Diesel Engine Map Model Based Observer for HEVS," IEEE Vehicle Power and Propulsion Conference (VPPC), Chicago, Sept 7-9, pp. 550-555, 2005.
5. **Bogosyan, S.**; Suravaram, P.R.; Gokasan, M., "Sliding Mode Based Rejection of Load and Torque Ripple in a Direct-Drive 2 DOF Robot Arm," ;Industrial Electronics Society, 2005. IECON 2005. 32nd Annual Conference of IEEE 6-10 Nov., 2005 Page(s):1986 - 1992
6. M. Barut, **S. Bogosyan** and M. Gokasan, "EKF Based Sensorless Direct Torque Control Of IMs In The Low Speed Range," IEEE International Symposium on Industrial Electronics - ISIE 2005, Dubrovnik, Croatia, June 20-23, 2005.
7. A. Arisoy, M. Gokasan, **O.S. Bogosyan**, "Partial Feedback Linearization Control of A Single Flexible Link Robot Manipulator," 2nd International Conference on Recent Advances in Space Technologies Space in the Service of Society RAST 2005 9-11 June 2005, pp. 282-287, Istanbul, Turkey.
8. **Bogosyan, S.**, Gokasan, M., "An EKF Based Solution for the Compensation of Load, Friction and Torque Ripple in Direct Drive Systems", IEEE IECON'03, Roanoke, Virginia, 2003.
9. Soylemez, T., Gokasan, M., **Bogosyan, S.**, "Position Control Of A Single Link Robot Arm Using A Multi-Loop PI Controller", IEEE Control Applications Conference, CCA 2003, 2003.
10. Barut, M., **Bogosyan, S.**, Gokasan, M., "An EKF Based Reduced Order Estimator for the Sensorless Control of IM's", IEEE Control Applications, CCA 2003, 23-25 June 2003 Page(s):1256 - 1261 vol.2.
11. Temeltas, H., Gokasan, M., **Bogosyan, S.**, Kilic, A., "Hardware in The Loop Simulation Of Robot Manipulators Through Internet", in Mechatronics Education, 28th Annual Conference of the IEEE Industrial Electronics Society, (IECON 2002), November 5 – 8, 2002, Seville, Spain.
12. Barut, M., **Bogosyan, S.**, Gokasan, M., "EKF based Estimation for direct vector control of Induction motors", Industrial Electronics Society, IECON '02, The 28th Annual Conference of the IEEE, 2002.

13. H. Temeltas, M. Gokasan, **S. Bogosyan**, A Nonlinear Load Simulator for Robot Manipulators, IECON 01, Denver, Colorado, USA, Nov. 29 - Dec. 2, 2001.
14. **S. Bogosyan**, M. Gokasan, C. Hajiyef, An Application of EKF For The Position Control Of a Single Link Arm, IECON 01, Denver, Colorado, USA, Nov. 29 - Dec. 2, 2001.
15. **Seta Bogosyan**, Metin Gokasan, "A Robust Feedback Linearizing Approach for the Precise Control of Direct Drive Systems", 2000 IEEE CCA/CACSD Joint Conference, Alaska, ABD, pp.730-735, 2000.
16. **O. Seta Bogosyan**, Metin Gokasan, Elbrus M. Jafarov, "Sliding mode controllers for A nonlinear time-varying motion control system", IECON 99, San Jose, CA, USA, Nov.29-Dec.3, 1999.
17. **O. Seta Bogosyan**, Metin Gokasan, Asif Sabanovic, "A Sliding Mode Based Disturbance Observer for Motion Control Systems", 5th International Workshop on Variable Structure Systems,VSS'99, Longboat Key, Florida, USA.
18. Metin Gokasan, **O. Seta Bogosyan**, Ara Arabyan, Asif Sabanovic, A sliding mode based controller for a flexible arm with a load", IEEE, Industrial Electronics and Control, IECON'98, Aachen, Germany, 1998.
19. Metin Gokasan, **O. Seta Bogosyan**, Asif Sabanovic, Ara Arabyan, "A sliding mode observer and controller for a single link flexible arm", IEEE, Conference on Decision Control, CDC'98, .
20. **O. Seta Bogosyan**, Metin Gokasan, Asif Sabanovic, "Robust-Adaptive Linearization with Torque Ripple Minimization for a PMSM Driven Single Link Arm", 23rd Int. Conference on Industrial Electronics, Control and Instrumentation, Proc. of the IECON'97, vol: 1, pp. 102-107, New Orleans, Louisiana, USA, 1997.
21. **Bogosyan, O.S.**, Gokasan, M., " Adaptive torque ripple minimization of PMSM for direct drive applications, IEEE IAS Annual Meeting, IAS 95, 231-237, 8-10 Oct. Florida 1995.
22. **Bogosyan, O., S.**, Gokasan, M., Gurleyen, F., Kutman, T., "Adaptive torque ripple minimization in permanent magnet synchronous motors", Proc. of IEEE International Workshop on Intelligent Motion Control, 669-674, Istanbul, Turkey, 1990.

OTHER PEER REVIEW CONFERENCE PROCEEDINGS

23. A. Arisoy, M. Gokasan, **O. S. Bogosyan**, "Sliding Mode Based Partial Feedback Linearization Control of A Single Flexible Link Arm," EPE 2006, (Accepted).
24. M. Gokasan, **S. Bogosyan**, E. Bargar and D. Goering, "Improved Powertrain Control for an HE-HMMWV," 2005 SAE World Congress, SAE Paper 2005-01-0931, Military vehicle technology, Society of Automotive Engineers, SAE SP; 2005; No. 1962, pp 133-140.
25. Barut, M., **Bogosyan, S.**, Gokasan, M., "EKF Based Estimator for Sensorless Direct Torque Control of Induction Motors," Proc. on International Aegean Conference on Electrical Machines and Power Electronics, pp. 515-520, 26 - 28 May, 2004, Istanbul – Turkey.
26. Bolat V., **Bogosyan, S.**, Gokasan, M., "Self-Tuning Fuzzy Control of Parallel Active Filters," Proc. on International Aegean Conference on Electrical Machines and Power Electronics, pp. 123-128, 26 - 28 May, 2004, Istanbul – Turkey.
27. Barut, M., **Bogosyan, S.**, Gokasan, M., "EKF Based Sensorless Direct Torque Control of Induction Motors", International Conference and Electrical and Electronics Engineering, ELECO'2003, Bursa, Turkey, 2003.
28. Barut, M., **Bogosyan, S.**, Gokasan, M., "Sensorless Direct Vector Control Of Induction Motors Using EKF Algorithm", Mathematics and Informatics for Industry, MII-2003, 2003.
29. M. Gokasan, S. Kurtulan, M. Kalyon, **S. Bogosyan**, F. Caliskan, O. Yildiz, "Bosporus Metro Control System Analysis", Int. Advanc. Technol. Sysmp., 145-158, Istanbul, 8-10 March,1999

30. M. Kalyon, M. Gokasan, S.Kurtulan, O. Yildiz, **S. Bogosyan**, F. Caliskan, "Bosporus Metro Control System Simulation", Int. Advanc. Technol. Sysmp., 159-170, Istanbul, 8-10 March,1999.
31. Hakan Temeltas, Metin Gokasan, **O. Seta Bogosyan**, "A Hardware-In-the-Loop Simulator with Actual Torque for the Mechatronics Design of High Performance Robots", Proc. of IASTED, International Conference Applied Modeling and Simulation Sept. 1-3,1999, Cairns Australia.
32. **O. Seta Bogosyan**, Metin Gokasan, Asif Sabanovic, Ara Arabyan "Sliding mode control of a single-link flexible arm", World Automation Congress, WAC'98, 2nd Int. Symp. on Intelligent Automation and Control, ISIAC'98, Anchorage, Alaska, USA, May 10-14, 1998, pp.ISIAC 133.1-133.6.
33. Metin Gokasan, **O.Seta Bogosyan**, Asif Sabanovic, "Disturbance Observer Based Sliding Mode Control for A Single Link Arm", World Automation Congress, WAC'98, 2nd Int. Symp. on Intelligent Automation and Control, ISIAC'98, Anchorage, Alaska, USA, May 10-14, 1998, pp.ISIAC 102.1-102.6.
34. Chingiz Hajiyev, Metin Gokasan, **O. Seta Bogosyan**, "Parameter Identification For The Control Of A Single Link Arm", 2nd International Symposium on Intelligent Manufacturing Systems, IMS'98, Sakarya University, 1998, vol. II, pp. 777-782.
35. **Bogosyan, O.,S.**, Gokasan, M., Kutman, T., "Adaptive position control of permanent magnet synchronous motors and torque ripple suppression", Proc. of International Aegean Conference on Electrical Machines and Power Electronics, 366-371, Kusadasi, Turkey, 1992.
36. Gokasan, M., **Bogosyan, O., S.**, Kutman, T., "Optimal speed control of squirrel cage induction motor", Proc. of International Aegean Conference on Electrical Machines and Power Electronics, 19-23, Kusadasi, Turkey, 1992.
37. Gokasan, M., **Bogosyan, O., S.**, Gurleyen, F., "Adaptive optimum control of a separately excited DC machine", Proc. of International Conference on Electrical Machines, 473-476, Italy, 1988.
38. **Bogosyan, O.,S.**, Gokasan, M., Kutman, " Optimal speed control of a separately excited DC machine", Proc. of European Conference on Power Electronics and Applications, EPE87, 1083-1086, France, 1987.
39. Kutman, T., Gokasan, M., **Bogosyan, O., S.**, "Analysis of losses and torque ripples in current controlled VS-PWM inverter drives", International Conference on Electrical Machines, ICEM86, 999-1002, Munchen 1986.
40. Kutman, T., **Bogosyan, O., S.**, Gokasan, M., "Microprocessor implementation of squirrel cage induction machine speed control", IFAC Symposium on Microcomputer Application In Process Control, A15-8 - A15-15, Istanbul 1986.
41. M. Barut, **S. Bogosyan**, M. Gokasan, "Extended Kalman Filter Based Flux, Speed and Load Torque Estimation," Symposium of the Turkish National Automatic Control Committee, TOK 2002, pp. 211-217, (In Turkish).
42. M. T. Soylemez, M. Gokasan, **S. Bogosyan**, "Robust Control of a Robot Arm with PID Controller," TOK 2001, Symposium of the Turkish National Automatic Control Committee, 125-130, 18-19 Ekim 2001, Bursa, (In Turkish).
43. S. Kurtulan, M. Gokasan, **S. Bogosyan**, "Control of a Rail Vehicle Using Programmable Logic Controller," ELECO 2000, Bursa, Turkey, 2000, (In Turkish).
44. **Bogosyan, S.**, Gokasan, M., "A Numerical Method for Optimal Control of DC Motor," 2nd Congress on Electrical Engineering, 527-530, Ankara, 1987, (In Turkish).
45. **Bogosyan, S**, Kutman T, "Speed Control of Squirrel Cage Induction Motors with Voltage Fed Inverters," Proceedings of the Symposium for 210th Anniversary of ITU, pp 1642-1674, 1983.

46. M. Gokasan, **S. Bogosyan**, H.E. Bargar, and D.J. Goering "Sliding Mode Powertrain Control for a Military HEV," ARC Conference, 2005.

Technical Reports:

- **Seta Bogosyan**, Metin Gokasan, "Modular control units design and application for direct drive robots with hardware in the loop Simulator," Project No: EEEAG201 Turkish Scientific and Technologic Research Organization, TUBITAK Project Report, 2002.
- **Seta Bogosyan** and Brad Paden, "Small Parts Handling Robot. Center for Robotics Systems in Microelectronics," University of California at Santa Barbara, 1988.
- **Seta Bogosyan**, "Adaptive-Optimal Control of Brushless DC Motors," Center for Robotics Systems in Microelectronics, University of California at Santa Barbara, 1988.
- **Seta Bogosyan**, Degang Chen and Brad Paden, "Nonlinear Adaptive Torque Ripple Compensation," Center for Robotics Systems in Microelectronics, University of California at Santa Barbara, 1989.

G. Co-authored Books

Kemal Sarioglu, Metin Gokasan, **Seta Bogosyan**, "Induction Machines and Control," Birsen Publishing, 2003.

Edited Books and Lecture Notes

- 1 **Seta Bogosyan**, "Robot Control," ECE 181C, ME 271C, Lecture Notes, University of California, Santa Barbara, Dept. of Elec. and Computer Engineering, Spring, 1990.
- 2 **Seta Bogosyan**, Metin Gokasan, Salman Kurtulan, "Digital Design," M. Mano, Second Edition, Prentice Hall 1991, Turkish Translation and editing for Literatur Publ. Ltd., 2001, (in Turkish).
- 3 Nejat Tuncay, Metin Gokasan, **Seta Bogosyan**, "Power Electronics," N. Mohan, T. Undeland, W. Robbins, Second Edition, Prentice Hall 1995, Turkish Translation and editing for Literatur Publ. Ltd., 2002, (in Turkish).

I. Synergistic Activities:

1. Society memberships and administration:

Associated Editor: Intelligent Automation & Soft Computing, An International Journal, (in Science Citation Index), (2006-).

Vice President: IEEE IES Membership Activities (2006-)

Senior Member: IEEE (2005-)

Member: IEEE (1992 – 2005)

Chair: IEEE IES Education Committee (2005-)

Chair: IEEE IES Technical Committee on Engineering Education and Information Technologies, (2005-)

AdCom Member: IEEE IES (2002- present)

Membership Coordinator: IEEE IES Region 1-7, (USA), (2004-)

Chair: IEEE RA/IE Joint Chapters, (1999 - 2004)

2. Conferences

Special Session Chair: IEEE, IECON 2005; IEEE ISIE 2006, IEEE IECON 2006, IEEE Mechrob 2004

Track Chair: IEEE Mechrob 2004

Assoc. Editor: IEEE CCA 2006; IEEE IECON 2003

Program Committee Member: MICAI 2005, 2006

Reviewer: IEEE, IECON 2003, IEEE Mechrob 2004, IEEE IECON 2005, IEEE MELECON 2005, IEEE IECON 2006, IAESTED, CCA 2005, IEEE CCA 2006, IEEE ISIE 2005, IEEE ISIE 2006, IEEE ICELIE 2006, MICAI 2005, MICAI 2006.

Journal Referees: IEEE Trans. on Industrial Electronics, Journal of Intelligent System, Proc. Institute of Mech. Eng., Part I, Journal of Systems and Control Engineering, Intelligent Automation & Soft Computing, an International Journal, Lecture Notes In Artificial Intelligence

Project Referees: U. S. Army Research Office, Project, 2005 Young Investigator Program

J. Honors and Awards:

ITU Research Award (1987)

Scholarship for Achievement for Istanbul Armenians, 1988.

RESEARCH INTERESTS

The following are the ongoing research studies conducted by Dr. Bogosyan:

- ✚ **Remote/ on-site control of PUMA 560 Robot via the internet:** the developed system allows robot control research (undergrad/advanced) to be conducted on the PUMA robot from anywhere in the world. An extension of the research is the **time delay compensation for the bilateral control of two robots** in two different places in the world, recently funded by NSF.
- ✚ **Remotely Accessible Hardware in the Loop Simulators (HILS) for Robotics and Hybrid Electric Vehicle (HEVs) applications via the Internet:** The established HILS system allows the researcher to develop the dynamics of any robotic system, thus making any robotic configuration available to the user for real-time experimentation and control. A HILS system is already developed for PUMA and SCARA robots and it is now remotely accessible for control and animations at <http://www.uaf.edu/ece/remote-robotics> Vehicle dynamics, tire,/terrain dynamics research is also being conducted on the HILS for on-site/remote control of HEVs; also funded by NSF and NWACC.
- ✚ **Data Fusion of MEM Multisensor Arrays for detection and tracking** The research involves the development of algorithms combining Extended Kalman Filters(EKF) and Neural Networks (NN) for monitoring critical operations and/or detection and tracking of unknown objects in an environment. Experiments are to be conducted using multiple MEM sensors; funded by the EPSCOR Program.
- ✚ **Sensorless Velocity and Position Control of Squirrel Cage Induction Motors (IM):** Sensorless high performance control of IMs is currently the subject of a PhD thesis.