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Postdoctoral Researcher Aug. 2015 – present
Catalysis Center for Energy Innovation (CCEI), University of Delaware, Newark, DE
Research title: Multiscale Modeling with a Focus on Uncertainty Quantification
Advisor: Prof. Dionisios Vlachos

Ph.D. in Chemical Engineering Aug. 2011 – July 2015
Department of Chemical Engineering, The Pennsylvania State University, University Park, PA
Thesis title: Synthesis of Advanced Control Structures for Complex Chemical Processes Using Sensor Networks
Advisor: Prof. Antonios Armaou

M.S. in Chemical Engineering - Process Modeling, Simulation and Control Sep. 2008 – Sep. 2010
Chemical and Petroleum Engineering Department, Sharif University of Technology, Tehran
Thesis title: Simulation, Control and Synchronization of Chaotic Chemical Reactors
Advisor: Prof. Mohammad Shahrokhi

B.S. in Chemical Engineering Sep. 2004 – Sep. 2008
Chemical and Petroleum Engineering Department, Sharif University of Technology, Tehran
Thesis title: Dynamic Simulation of Multi-Phase Transport-Reaction Processes
Advisor: Prof. Ramin Bozorgmehry Boozarjomehry

AWARDS:

- AIChE Computing and Systems Technology (CAST) Division Travel Grant, 2015
- Finalist for the AIChE Computing and Systems Technology (CAST) Director's Student Presentation Award, 2015
- O. Hugo Schuck Best Paper Award in the Application Category, American Automatic Control Council (AACC), 2014
- Best Session Presentation Awards in American Control Conferences (Session MoA14), 2013 & (Session ThA16), 2015
- Finalist for the Alumni Association Dissertation Award, The Pennsylvania State University, 2014-15
- Finalist for the Best Paper Award, Department of Chemical Engineering, The Pennsylvania State University, 2014
- Society of Industrial and Applied Mathematics (SIAM) Graduate Student Travel Grant, 2014
- College of Engineering Student Travel Awards, The Pennsylvania State University, 2013 & 2014 & 2015
- American Automatic Control Council (AACC) Student Travel awards, 2013 & 2014 & 2015
- Walter R. and Aura Lee Supina Graduate Fellowship in Chemical Engineering, The Pennsylvania State University, 2011
- Premier Award for 2nd place in Graduate program at Chemical and Petroleum Eng. Department amongst 124 Graduate Students, 2010
- Sharif University of Technology Dean Award (Sharif Stars), 2009
- Iran Presidential Award, 2009
- Silver Medal in Iranian National Chemical Eng. Olympiad, 2008
- Iranian Association of Chemical Engineers Best Undergraduate Student award, 2008
- Iranian National Foundation of Elites Award, 2008
- Sharif University of Technology Exceptional Talents Fellowship, 2008-2010
- Iranian National Foundation of Elites Fellowship, 2008-2010
- Premier Award for 3rd place in Undergraduate program at Chemical and Petroleum Eng. Department amongst 157 Undergraduate Students, 2008
- Ranked 136th in National Undergraduate School Entrance Exam amongst nearly 450,000 Participants, 2004

JOURNAL PAPAERS:

1. Pourkargar D.B., Armaou A., Lyapunov-based control of nonlinear transport-reaction processes via adaptive model reduction with minimum feedback information, IEEE Transaction on Automatic Control, under review, 2015
2. Pourkargar D.B., Armaou A., Spatiotemporal dynamic shaping of semi-linear dissipative distributed parameter systems, Journal of Process Control, under review, 2015
3. Pourkargar D.B., Armaou A., Dynamic shaping of transport-reaction processes with a combined sliding mode controller and Luenberger-type dynamic observer design, Chemical Engineering Science, DOI: 10.1016/j.ces.2015.07.054, 2015
4. Pourkargar D.B., Armaou A., Design of APOD-based switching dynamic observers and output feedback control for a class of nonlinear distributed parameter systems, Chemical Engineering Science, Special Issue on Control and Optimization of Smart Plant Operations, 2015; 136:62-75
5. Pourkargar D.B., Armaou A., Control of spatially distributed processes with unknown transport-reaction parameters via two layer system adaptations, AIChE J. , 2015; 61(8):2497-2507
6. Pourkargar D.B., Armaou A., APOD-based control of general linear distributed parameter systems in the presence of network communication constraints, AIChE J. , 2015; 61(2):434-447

7. Pourkargar D.B., Armaou A., Geometric output tracking of nonlinear distributed parameter systems via adaptive model reduction, Chemical Engineering Science, 2014; 116:418-427
8. Pourkargar D.B., Armaou A., Modification to adaptive model reduction for regulation of distributed parameter systems with fast transients, AIChE J., 2013; 59(12):4595-4611
9. Pourkargar D.B., Shahrokhi M., Optimal fuzzy synchronization of generalized Lorenz chaotic systems, The Journal of Mathematics and Computer Science, 2011; 2(1):27-36

REFEREED CONFERENCE PAPERS:

10. Pourkargar D.B., Armaou A., Adaptive control of chemical distributed parameter systems, In Proceeding of the IFAC International Symposium on Advanced Control of Chemical Processes (ADCHEM), 682-687, Whistler, Canada, 2015
11. Pourkargar D.B., Armaou A., Low-dimensional adaptive output feedback controller design for transport-reaction processes, In Proceeding of the European Control Conference (ECC), 879-884, Linz, Austria, 2015
12. Pourkargar D.B., Armaou A., Wave motion suppression in the presence of unknown parameters using recursively updated empirical basis functions, In Proceeding of the American Control Conference (ACC), 2619-2624, Chicago, IL, 2015
13. Pourkargar D.B., Armaou A., Output tracking of spatiotemporal thermal dynamics in transport-reaction processes via adaptive model reduction, In Proceeding of the American Control Conference (ACC), 3364-3370, Portland, OR, 2014
14. Pourkargar D.B., Armaou A., Feedback control of linear distributed parameter systems via adaptive model reduction in the presence of device network communication constraints, In Proceeding of the American Control Conference (ACC), 1667-1673, Portland, OR, 2014
15. Pourkargar D.B., Armaou A., A refined adaptive model reduction approach for control of fast evolving distributed parameter systems, In Proceeding of the 21st International Symposium on Mathematical Theory of Networks and Systems (MTNS), 140-147, Groningen, Netherlands, 2014
16. Pourkargar D.B., Armaou A., Control of dissipative partial differential equation systems using APOD based dynamic observer designs, In Proceeding of the American Control Conference (ACC), 502-508, Washington DC, 2013
17. Pourkargar D.B., Orkomi A.A., Boozarjomehry R.B., Fuzzy clustering of complex hydrocarbon mixtures, In Proceeding of 4st International Conference of Fuzzy Information & Engineering, Amol, 2010
18. Pourkargar D.B., Shahrokhi M., Optimal fuzzy synchronization, In Proceeding of 4st International Conference of Fuzzy Information & Engineering, Amol, 2010
19. Orkomi A.A., Pourkargar D.B., Boozarjomehry R.B., Effects of transfer function selection on optimal approximate feedback linearization of CO_2 Absorption by amine solution, In Proceeding of 1st International Regional Chemical & Petroleum Engineering Conference & 13th National Iranian Chemical Engineering Congress, Kermanshah, 2010
20. Pourkargar D.B., Shahrokhi M., Synchronization of two chaotic chemical reactors, In Proceeding of 1st International Regional Chemical & Petroleum Engineering Conference & 13th National Iranian Chemical Engineering Congress, Kermanshah, 2010
21. Pourkargar D.B., Orkomi A.A., Boozarjomehry R.B., Fuzzy feedforward control of amine gas sweetening plant, In Proceeding of International Conference of Control, Instrumentation and Automation (ICCIA), Tehran, 2010
22. Pourkargar D.B., Orkomi A.A., Boozarjomehry R.B., Control of amine gas sweetening plant by approximate fuzzy feedback linearization via genetic algorithm, In Proceeding of International Conference of Control, Instrumentation and Automation (ICCIA), Tehran, 2010
23. Pourkargar D.B., Orkomi A.A., Comparison between PID and a novel model based controller in interactive chemical plants control, In Proceeding of International Conference of Control, Instrumentation and Automation (ICCIA), Tehran, 2010

PRESENTATIONS:

24. Pourkargar D.B., Armaou A., Adaptive output feedback control of transport-reaction processes via two layer system adaptations, Paper 569g, AIChE Annual Meeting, Salt Lake City, UT, 2015
25. Pourkargar D.B., Armaou A., Estimation of spatially distributed processes via adaptive model reduction using mobile sensors network, Paper 583a, AIChE Annual Meeting, Salt Lake City, UT, 2015
26. Pourkargar D.B., Shahri S.M.K., Rioux, R.M., Armaou A., Spatiotemporal modeling and identification of CO2 adsorption columns, Paper 662d, AIChE Annual Meeting, Salt Lake City, UT, 2015
27. Pourkargar D.B., Armaou A., Robust adaptive model predictive control of chemical and biological systems, Poster 6it, AIChE Annual Meeting, Salt Lake City, UT, 2015
28. Pourkargar D.B., Armaou A., Adaptive control of dissipative distributed parameter systems via recursively updated reduced order models, Paper 555f, AIChE Annual Meeting, Atlanta, GA, 2014
29. Pourkargar D.B., Armaou A., Shaping the spatiotemporal dynamics of transport-reaction processes via adaptive proper orthogonal decomposition, Paper 610h, AIChE Annual Meeting, Atlanta, GA, 2014
30. Pourkargar D.B., Armaou A., Estimation of distributed parameter systems using recursively updated empirical basis functions, Poster 568y, AIChE Annual Meeting, Atlanta, GA, 2014

31. Pourkargar D.B., Armaou A., Robust dynamic shaping of distributed parameter systems via recursively updated empirical basis functions, Session CP7, SIAM Annual Meeting, Chicago, IL, 2014
32. Pourkargar D.B., Armaou A., Output Feedback Control of Nonlinear Distributed Parameter Systems via Adaptive Model Order Reduction, Department of Chemical Engineering Research Symposium, The Pennsylvania State University, University Park, PA, 2014
33. Pourkargar D.B., Armaou A., Control of fast evolving distributed parameter systems via information aware model reduction recursions, 11th Annual College of Engineering Research Symposium (CERS), The Pennsylvania State University, University Park, PA, 2014
34. Pourkargar D.B., Armaou A., APOD-based control of spatially distributed processes with limited sensor/controller communication bandwidth, 11th Annual College of Engineering Research Symposium (CERS), The Pennsylvania State University, University Park, PA, 2014
35. Pourkargar D.B., Armaou A., Output feedback control of transport-reaction processes based on adaptive model reduction in the presence of sensor communication constraints, Paper 613a, AIChE Annual Meeting, San Francisco, CA, 2013
36. Pourkargar D.B., Armaou A., Improving model reduction approaches for output feedback control of fast evolving spatially distributed processes, Paper 589c, AIChE Annual Meeting, San Francisco, CA, 2013
37. Pourkargar D.B., Armaou A., Design of recursively updated reduced order dynamic observers for distributed parameter systems, Session CP4, SIAM Conference on Control and its Application, San Diego, CA, 2013
38. Pourkargar D.B., Armaou A., Output feedback control of distributed parameter systems based on adaptive model reduction, 10th Annual College of Engineering Research Symposium (CERS), University Park, PA, 2013
39. Pourkargar D.B., Armaou A., Output feedback control of transport reaction processes using adaptive proper orthogonal decomposition, Paper 747d, AIChE Annual Meeting, Pittsburgh, PA, 2012
40. Pourkargar D.B., Ahmadi A., Boozarjomehry B. R., Thermodynamic and transport properties estimation of a complicated mixture of hydrocarbons by fuzzy clustering methods, 19th International Congress of Chemical and Process Engineering (CHISA19) and the 7th European Congress of Chemical Engineering (ECCE-7), Prague, Czech Republic, 2010
41. Orkomi A.A., Pourkargar D.B., Boozarjomehry R.B., Approximate fuzzy feedback linearization of amine gas sweetening plant via genetic algorithm, 19th International Congress of Chemical and Process Engineering (CHISA19) and the 7th European Congress of Chemical Engineering (ECCE-7), Prague, Czech Republic, 2010

TEACHING EXPERIENCES:

- Teaching Assistant, Mathematical Modeling in Chemical Engineering, The Pennsylvania State University, University Park. Prof. A. Armaou, Spring 2014
- Teaching Assistant, Process Control, Sharif University of Technology. Prof. R. Bozorgmehry Boozarjomehry, Fall 2010, Prof. M. R. Pishvaie, Fall 2009 & Fall 2010
- Teaching Assistant, Unit Operations of Chemical Engineering II, Sharif University of Technology. Prof. M. Baghalha, Fall 2008 & Spring 2009
- Teaching Assistant, Basic Principles and Calculation in Chemical Engineering, Sharif University of Technology. Prof. A. Molaei Dehkordi, Fall 2010 & Spring 2011
- Teaching Assistant, Process Control Lab, Sharif University of Technology. Prof. M. R. Pishvaie, Spring 2010 & Summer 2010
- Invited Instructor, Process Design (40 hrs. Course), Petro Pazhohesh Sharif Co., Tehran (2009)
- Invited K-12 Instructor, Introduction to Chemical Process Industries, Allameh Helli High School, Tehran (2008)

WORK EXPERIENCES:

- Research Assistant in Chemical Engineering, PennState University, University Park (2011-Present)
- Research Associate in Process Simulation & Control, Sharif University of Technology, Tehran (2010-2011)
- Senior Engineer in Automation and Control, High Tech Development Co., Tehran (2010-2011)
- Supervisor of Process Control Laboratories, Sharif University of Technology, Tehran (2009-2010)
- Research Engineer & Programmer in Wide Optimization of Gas Pipeline Networks, SEPDCO, Tehran (2008-2009)
- Research Engineer in Computer Aided Process Design, Namvaran Eng. & Management Co., Tehran (2007-2008)

CERTIFICATES:

TOTAL Company and TPA Certifications of (1) Managing Corrosion in Oil & Gas Industry 2010, (2) Reduction of CO_2 Emissions by Capture and Storage 2010, (3) Drilling Engineering 2009, (4) Exploration through Geophysical Data 2009

REVIEW EXPERIENCES:

American Control Conferences 2013 & 2015, ASME Dynamic Systems and Control Conference 2014, College of Engineering Research Symposium, The Pennsylvania State University 2014 & 2015, AIChE Journal, Journal of Industrial and Engineering Chemistry Research, Asian Journal of Control, Automatica, Journal of Process Control, IEEE Transaction on Automatic Control

PROFESSIONAL ACTIVITIES:

- Session Chair, 12th Annual College of Engineering Research Symposium (CERS), The Pennsylvania State University, University Park, 2015
- Poster Session Judge, Graduate Exhibition, The Pennsylvania State University, University Park, 2015

PROFESSIONAL MEMBERSHIPS:

- Member of American Institute of Chemical Engineering (AIChE), 2013-present
  - AIChE Computing and System Technology (CAST) Division
- Associate Member of Institute of Electrical and Electronic Engineers (IEEE), 2012-present
  - IEEE Control Systems Society (CSS), IEEE Communications Society (ComSoc), IEEE Life Sciences, IEEE Young Professionals, IEEE Cloud Computing Community, IEEE Internet of Things Community, IEEE Smart Grid Community
- Member of Society for Industrial and Applied Mathematics (SIAM), 2012-present
  - SIAM Activity Group on Control and Systems Theory (SIAG/CST), SIAM Activity Group on Analysis of Partial Differential Equations (SIAG/APDE)
- Member of Society of Petroleum Engineers (SPE), 2014-present

REFERENCES:

- Antonios Armaou, PhD
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