Reza Asgharzadeh Shishavan
Chemical Engineer

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Objective

Seeking a graduate summer internship position in the area of control and optimization within the energy and chemical industry. Highly motivated to work in an innovative and collaborative environment.

Education

Doctor of Philosophy in Chemical Engineering – Process Control (GPA: 3.9/4.0)   Aug 2011-Present
Brigham Young University

Master of Science in Chemical Engineering – Process Engineering   2007-2010
Tarbiat Modares University (TMU), Tehran, Iran

Bachelor of Science in Chemical Engineering – Petrochemical Processes   2003-2007
Sahand University of Technology (SUT), Tabriz, Iran

Research Projects

PhD Thesis, Monitoring, Control, and Optimization of Upstream Infrastructure   2011-present
- Distributed pressure control with nonlinear MPC and nonlinear moving horizon estimation.
- Detection and attenuation of unwanted gas influx in drilling process.
- Stabilization of platform through automation and monitoring system, fault detection algorithms, and control system.

MS Thesis, Thermal Cracking of Vaccum Residue   2007-2010
- Investigated the kinetic effects of thermal cracking in vacuum residues for structural changes both experimentally and in simulation.

BS Thesis, Hydrogen Separation Using Palladium based membranes   2007
- Modelled hydrogen permeation through Palladium/a-Alumina nanocomposite membranes.

Professional Experience

Applications Engineer, Astro Technology Inc. and Hess Corporation   2012- 2013
- Designed data acquisition and monitoring software for fiber optic sensors on offshore platforms for load balance control.
- Configured HMI operator interfaces using OPC, Modbus and web programming for fast and reliable satellite communications and control.
- Collaborated on modelling temperature, load and strain for platform stability.

R&D Engineer, Rock Wool Company   2008-2010
- Designed thermal oxidizer and control system for burning waste gas during mineral wool production.
- Researched and modeled burning waste gas emissions from a cupola (high temperature) furnace.

Process Safety Engineer, Sodreh Sazeh Pars Company   2008
- Contributed to a team effort to provide emergency shutdown procedures for chemical processes.

Process Engineer, Tabriz Refinery   2006
- Analyzed the performance of a catalytic reformer.

Other Design Projects

- Experimental steam cracking of vacuum residue.
- Designed algorithm for olefin furnace to determine optimal operating conditions.
- Simulated air separation plant via Aspen Plus.
- Designed preliminary stages of Methanol to Olefin (MTO) Unit.
- Designed shell & tube heat exchanger for Tabriz petrochemical plant.

Honors and Awards

• **2011-2012:** Top chemical engineering graduate student at BYU.
• **2007:** Ranked top 1% in the Nationwide University entrance examination for MS degree and admission to Tarbiat Modares University, ranked 6th among Middle Eastern graduate schools.
• **2003:** Ranked top 1% in nationwide university entrance examination for BS degree and admission to Sahand University of Technology.

Leadership

• **2014:** Selected as lead TA for graduate optimization class in winter 2014.
• **2013:** Directing undergraduate researchers in upstream infrastructure project.
• **2013:** Lead TA for process control class with over 75 students. Supervise problem solving and review sessions.
• **2012-2013:** Team leader for application software development team in Astro Technology Inc.
• **2008-2010:** Led research group in thermal and steam cracking of refinery vacuum residue project.

Computer and Programming Skills

• **Advanced Process Control (APC), simulation, and optimization** with APMonitor, MATLAB, Simulink and Python
• **OPC and Modbus Interface** with Kepserver and Python
• **Process simulation** with HYSYS and Aspen plus
• **Computational fluid dynamics (CFD)** using Fluent
• **Programing languages:** MATLAB, Python, MySQL Database, Apmonitor, PHP, JavaScript and HTML
• **General Software:** Microsoft Office (Word, Excel, Power point), EndNote, Mathcad, Visio and Photoshop

Selected Publications

Hedengren, J. D. and Asgharzadeh Shishavan, R., Powell, K.M., and Edgar, T.F., Implementation Details for Nonlinear Modeling, Data Reconciliation, and Dynamic Optimization, Preprint submitted to Computers and Chemical Engineering, 2014.

Asgharzadeh Shishavan, R. and Hedengren, J.D., Improved Estimator Insensitivity to Outliers, Measurement Drift, and Noise, AIChE Sring Meeting, New Orleans, LA, April 2014.

Asgharzadeh Shishavan, R., Memmott, J., Hedengren, J.D, and Pixton, D., Pressure Regulation and Kick Attenuation with Wired Pipe Technology in Managed Pressure Drilling. AIChE Sring Meeting, New Orleans, LA, April 2014.

Asgharzadeh Shishavan, R., Brower, D., Memmott, J., Hedengren, J.D, and Brower, A., New Advances in Post-Installed Subsea Monitoring Systems for Structural and Flow Assurance Evaluation, OMAE2014/24300, San Francisco, CA, June 2014.

Pixton, D, Asgharzadeh Shishavan, R., Hedengren, J.D, Craig, A, Addressing UBO and MPD Challenges with Wired Drillpipe, SPE/IADC MPD & UBO Conference & Exhibition, Madrid, Spain: 8 - 9 Apr 2014.

NASA Technology Improves Safety On Offshore Platforms. Collaboration work with Astro Technology, Inc. and NASA published internationally in leading news outlets including Wall Street Journal, Bloomberg, Washington Post, etc. URL: http://online.wsj.com/article/PR-CO-20130605-911282.html, retrieved, 18 Sept 2013.

Brower, D., Hedengren, J.D, Asgharzadeh Shishavan, R., and Brower, A., Advanced Deepwater Monitoring System, OMAE2013/10920, Nantes, France, June 2013.

Asgharzadeh Shishavan, R., and Hedengren, J., Nonlinear Model Predictive Control of a Thermal Oxidizer System, Computing and Systems Technology Division, AICHE National Meeting, Pittsburgh, PA, Nov 2012.

Asgharzadeh Shishavan, R., Ghashghaee M., Karimzadeh R., Investigation of Kinetics and Cracked Oil Structural Changes in Thermal Cracking of Iranian Vacuum Residues, Fuel Processing Technology; 2011; 92; 2226.

Abbasi Aliabadi S., Karimzadeh R., Ghashghaee M., Asgharzadeh Shishavan, R., Effect of Operating Conditions and Physical Properties of the Feed on Sulfur Content of the Liquid Product in Thermal Cracking of Vacuum Residue and Its Kinetic Modeling, PETROLEUM RESEARCH; 2012; 22(70);3-12.

Asgharzadeh Shishavan, R., Karimzadeh R., Ghashghaee M., Abbasi Aliabadi S., Effect of Operating Conditions in Thermal Cracking of Vacuum Residue, The 13th national Iranian Chemical Engineering Congress & 1th international regional Chemical and Petroleum Engineering conference (IChEC 2010).