Juergen Hahn

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EDUCATION

Ph.D., Chemical Engineering University of Texas at Austin	2002
M.S., Chemical Engineering University of Texas at Austin	1998
Diploma, Chemical Engineering RWTH Aachen, Germany graduated Summa Cum Laude	1997

EXPERIENCE

Department Head Department of Biomedical Engineering Rensselaer Polytechnic Institute, Troy, New York	2013-
Professor Department of Biomedical Engineering Department of Chemical & Biological Engineering Rensselaer Polytechnic Institute, Troy, New York	2012-
Associate Professor Artie McFerrin Department of Chemical Engineering Texas A&M University, College Station, Texas	2009-2012
Assistant Professor Artie McFerrin Department of Chemical Engineering Texas A&M University, College Station, Texas	2003-2009
Post-Doctoral Researcher Process Systems Engineering (Advisor: Wolfgang Marquardt) RWTH Aachen, Aachen, Germany	2002-2003
Graduate Research Assistant Department of Chemical Engineering (Advisor: Thomas F. Edgar) University of Texas at Austin, Austin, Texas	1997–2001

HONORS AND AWARDS

BMES Fellow	2022
AIChE Fellow	2020
IEEE CSS Board of Governors	2016

Trustee of Computer Aids in Chemical Engineering (CACHE)	2014-
AIMBE Fellow	2013
CAST Outstanding Young Researcher Award	2010
Ray Nesbitt Professorship II	2010-2012
Keller Faculty Fellowship	2008-2009
Brockett Professorship	2008-2009
Best Paper Award, Chemical Process Control 7	2006
Outstanding Reviewer, Automatica	2005, '06, '07
Best Referee Award, Journal of Process Control	2004
William S. Livingston Graduate Fellowship	2001-2002
David Bruton, Jr. Graduate Fellowship	2000-2001
Springorum Medal	1998
Fulbright Scholarship	1995-1996

EDITORIAL ACTIVITIES

Deputy Editor-in-Chief, Journal of Process Control	2020-
Editor, Optimal Control: Applications and Methods (Biomedical Systems)	2020-
Editor, Processes (Biological Systems)	2018-2020
Editor, Journal of Process Control (Biological Systems, Estimation)	2013-2016
Associate Editor, Journal of Personalized Medicine	2022-
Associate Editor, Journal of Advanced Manufacturing and Processing	2020-
Associate Editor, Processes	2015-2020
Associate Editor, Automatica	2011-2014
Associate Editor, Journal of Process Control	2010-
Associate Editor, Control Engineering Practice	2007-
Guest Editor, Computers & Chemical Eng., Special Issue honoring Tom Edgar	2020
Guest Editor, Processes, Special Issue on Mod. & Anal. of Signal Transduction	2014
Guest Editor, Automatica, Special Issue on Systems Biology	2010

LEADERSHIP POSITIONS IN PROFESSIONAL COMMUNITY

AIChE CAST Division Director	2019-2021
Scientific Advisory Board, Autism Research Institute	2019-
Advisory Council, Chemical & Biomolecular Eng. Dept., Tulane University	2019-
AACC Investment Committee	2019-
AICHE CAST 10B Program Chair	2017
IEEE CSS Board of Governors	2016
Trustee of Computer Aids in Chemical Engineering (CACHE)	2014-
IFAC Publication Committee	2014-2017
Chair of the IFAC Policy Committee	2011-2014
Executive Board of IFAC	2011-2014
CACHE Systems Biology Task Force	2010-2014

Conference Organization

Conference chair

FOSBE: 7th IFAC Conf. Foundations of Systems Biology in Engineering	2018
41st Northeast Bioengineering Conference (NEBEC)	2015

Program chair

Symposium on Modeling of Complex Processes	2005

Program co-chair

American Control Conference: Vice Chair for Invited Sessions	2018
American Control Conference: Technical Program Committee (AIChE)	2017
FOSBE: 5th IFAC Conf. Foundations of Systems Biology in Engineering	2015
18th International Federation of Automatic Control World Congress	2011
American Control Conference: Program Committee	2010
17th International Federation of Automatic Control World Congress	2008

International program committee

FOCAPO/CPC: Foundations of Computer-Aided Process Operations and Chemical Process Control	2023
DYCOPS-CAB: IFAC Conf. on Dyn. and Control of Process Systems, including Biosystems Symposium	2022
Adconip : Advanced Control of Industrial Processes	2022
CoDIT: 6th Int. Conf. on Control, Decision and Inform. Technologies	2019
FOSBE: 8th IFAC Conf. Foundations of Systems Biology in Engineering	2019
PSE: Process Systems Engineering	2018
MATHMOD: 9th Vienna Int. Conf. on Mathematical Modelling	2018
Adconip: Advanced Control of Industrial Processes	2017
DYCOPS: IFAC Symp. on Dynamics and Control of Process Systems	2016
FOSBE: 6th IFAC Conf. Foundations of Systems Biology in Engineering	2016
ADCHEM: Int. Symp. on Advanced Control of Chemical Processes	2015
Adconip: Advanced Control of Industrial Processes	2014
DYCOPS: IFAC Symp. on Dynamics and Control of Process Systems	2013
ADCHEM: Int. Symp. on Advanced Control of Chemical Processes	2012
FOSBE: 4th IFAC Conf. Foundations of Systems Biology in Engineering	2012
ICINCO: Int. Conf. on Inform. in Control, Automation and Robotics	2011
Adconip: Advanced Control of Industrial Processes	2011
ACC: American Control Conference	2010
FOSBE: 3rd IFAC Conf. Foundations of Systems Biology in Engineering	2009
ADCHEM: Int. Symp. on Advanced Control of Chemical Processes	2009
Adconip: Advanced Control of Industrial Processes	2008
ADCHEM: Int. Symp. on Advanced Control of Chemical Processes	2006

Service on Data and Safety Monitoring Board (DSMB)

Microbiota Transfer Therapy for Children with Autism Spectrum Disorder who Have Gastrointestinal Disorders (NCT04182633)	2019-2024
Microbiota Transfer Therapy for Children with both Pitt Hopkins Syndrome and Gastrointestinal Disorders (NCT04132427)	2019-2022
Microbiota Transfer Therapy for Adults with Autism Spectrum Disorder who Have Gastrointestinal Disorders (NCT03408886)	2018-2023

JOURNAL PUBLICATIONS

- G. Grivas, R.E. Frye, and J. Hahn. Maternal Risk Factors vary between Subpopulations of Children with Autism Spectrum Disorder. *Autism Research*, In Press (2022).
- J. Chuah, U. Kruger, G. Wang, P. Yan, and J. Hahn. Framework for Testing Robustness of Machine Learning-Based Classifiers. *Journal of Personalized Medicine* **12**, Vol. 8, 1314 (2022).
- F. Qureshi, J.B. Adams, T. Audhya, and J. Hahn. Multivariate Analysis of Metabolomic and Nutritional Profiles among Children with Autism Spectrum Disorder. *Journal of Personalized Medicine* **12**, No. 6, 923 (2022).
- F. Qureshi and J. Hahn. Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Big Data Meets Metabolomics. *Canadian Journal of Chemical Engineering*, In Press (2022).

- U. Kruger, X. Wang, M.J. Embrechts, A. Almansoori, and J. Hahn. Regularized Error-in-Variable Estimation for Big Data Modeling and Process Analytics. *Control Engineering Practice* **121**, 105060 (2022).
- H. Kerr, E. Ledet, J. Hahn, and K. Hollowood-Jones. Accurate Prediction of Successful Return to Sports from Sports-Related Concussion (SRC) is Enhanced by Quantitative Assessment of Balance in a Cohort of Youth Concussions with Tracked Recovery. *Sports Health: A Multidisciplinary Approach*, In Press (2022).
- G. Grivas, R.E. Frye, and J. Hahn. Pregnant Mothers' Medical Claims and Associated Risk of their Children being Diagnosed with Autism Spectrum Disorder. *Journal of Personalized Medicine* **11**, No. 10, 950 (2021).
- G.A. Buitimea-Cerón, J. Hahn, N. Medina-Herrera, A. Jiménez-Gutiérrez, J.A. Loredo-Medrano, and S. Tututi-Avila. Dividing-wall Column Design: Analysis of Methodologies Tailored to Process Simulators. *Processes* **9**, No. 7, 1189 (2021).
- S.M. Quinn, T. Vargason, N. Pokhrel, E. Antony, J. Hahn, and S.P. Gilbert. KIF3A Accelerates KIF3C within the Kinesin-2 Heterodimer to Generate Symmetrical Phosphate Release Rates for each Processive Step. *Journal of Biological Chemistry* **296**, 100020 (2021).
- K. Hollowood-Jones, J.B. Adams, D.M. Coleman, S. Ramamoorthy, S. Melnyk, S.J. James, B.K. Woodruff, E.L. Pollard, C.L. Snozek, U. Kruger, J. Chuah, and J. Hahn. Altered Metabolism of Mothers of Young Children with Autism Spectrum Disorder: A Case Control Study. *BMC Pediatrics* **20**, 557 (2020).
- F. Qureshi, J.B. Adams, K. Hanagan, D.-W. Kang, R. Krajmalnik-Brown, and J. Hahn. Multivariate Analysis of Fecal Metabolites from Children with Autism Spectrum Disorder and Gastrointestinal Symptoms. *Journal of Personalized Medicine* **10**, No. 4, 152 (2020). **Editor's Choice**
- D.-W. Kang, J.B. Adams, T. Vargason, M. Santiago, J. Hahn, and R. Krajmalnik-Brown. Distinct Fecal and Plasma Metabolites in Children with Autism Spectrum Disorders and their Modulation after Microbiota Transfer Therapy. *mSphere* 5:e00314-20 (2020). **Editor's Pick**
- T. Vargason, E. Roth, G. Grivas, J. Ferina, R.E. Frye, and J. Hahn. Classification of Autism Spectrum Disorder from Blood Metabolites: Robustness to the Presence of Co-occurring Conditions. *Research in Autism Spectrum Disorders* **77**, 101644 (2020).
- E. Lopez, J. Hahn, L. M. Gómez Echavarría, and H. Alvarez. Input Trajectory Design for the Enhancement of State Estimation through a Set-theoretic Approach to Observability. *Industrial & Engineering Chemistry Research* **59**, No. 30, pp. 13631–13641 (2020).
- S. Maiti, G. Grivas, K. Choi, W. Dai, Y. Ding, D. Penarete Acosta, J. Hahn, and A. Jayaraman. Modeling Inter-Kingdom Regulation of Inflammatory Signaling in Human Intestinal Epithelial Cells. *Computers and Chemical Engineering* **140**, 106954 (2020).
- F. Qureshi, J.B. Adams, D. Coleman, D. Quig, and J. Hahn. Urinary Essential Elements of Young Children with Autism Spectrum Disorder and their Mothers. *Research in Autism Spectrum Disorders* **72**: 101518 (2020).
- F. Fan, H. Shan, M.K. Kalra, R. Singh, G. Qian, M. Getzin, Y. Teng, J. Hahn, and G. Wang. Quadratic Autoencoder (Q-AE) for Low-dose CT Denoising. *IEEE Transactions on Medical Imaging* **39**, No. 6, pp. 2035-2050 (2020).
- T. Vargason, G. Grivas, K.L. Hollowood-Jones, and J. Hahn. Towards a Multivariate Biomarker-based Diagnosis of Autism Spectrum Disorder: Review and Discussion of Recent Advancements. *Seminars in Pediatric Neurology* **34**, 100803 (2020).
- G. Grivas, T. Vargason, and J. Hahn. Biomarker Identification of Complex Diseases/Disorders: Methodological Parallels to Parameter Estimation. *Industrial & Engineering Chemistry Research* **59**, No. 6, pp. 2366-2377 (2020). **Journal Cover**
- J.B. Adams, T. Vargason, D.-W. Kang, R. Krajmalnik-Brown, and J. Hahn. Multivariate Analysis of Plasma Metabolites in Children with Autism Spectrum Disorder and Gastrointestinal Symptoms Before and After Microbiota Transfer Therapy. *Processes* **7**, No. 11, 806 (2019).
- T. Vargason, R.E. Frye, D.L. McGuinness, and J. Hahn. Clustering of Co-occurring Conditions in Autism Spectrum Disorder during Early Childhood: A Retrospective Analysis of Medical Claims Data. *Autism Research* **12**, No. 8, pp. 1272–1285 (2019).

- T. Vargason, D.L. McGuinness, and J. Hahn. Gastrointestinal Symptoms and Oral Antibiotic Use in Children with Autism Spectrum Disorder: Retrospective Analysis of a Privately Insured U.S. Population. *Journal of Autism and Developmental Disorders* **49**, No. 2, pp. 647-659 (2019).
- T. Vargason, U. Kruger, E. Roth, L.M. Delhey, M. Tippett, S. Rose, S.C. Bennuri, J.C. Slattery, S. Melnyk, S.J. James, R.E. Frye, and J. Hahn. Comparison of Three Clinical Trial Treatments for Autism Spectrum Disorder through Multivariate Analysis of Changes in Metabolic Profiles and Adaptive Behavior. *Front. Cell. Neurosci.* 12:503 (2018).
- K.L. Hollowood, S. Melnyk, O. Pavliv, T. Evans, A. Sides, R.J. Schmidt, I. Hertz-Picciotto, W. Elms, E. Guerrero, U. Kruger, J. Hahn, and S.J. James. Maternal Metabolic Profile Predicts High or Low Risk of an Autism Pregnancy Outcome. *Research in Autism Spectrum Disorders* **56**, pp. 72-82 (2018).
- S.M. Quinn, D.P. Howsmon, J. Hahn, and S.P. Gilbert. Kinesin-2 Heterodimerization Alters Entry into a Processive Run along the Microtubule but not Stepping within the Run. *Journal of Biological Chemistry* **293**, pp. 13389-13400 (2018).
- D.P. Howsmon, T. Vargason, R.A. Rubin, L. Delhey, M. Tippett, S. Rose, S.C. Bennuri, J.C. Slattery, S. Melnyk, S.J. James, R.E. Frye, and J. Hahn. Multivariate Techniques Enable a Biochemical Classification of Children with Autism Spectrum Disorder versus Typically-Developing Peers: A Comparison and Validation Study. *Bioengineering & Translational Medicine* **3**, No. 2, pp. 156-165 (2018).
- K. Connery, M. Tippett, L. Delhey, S. Rose, J. Slattery, S.G. Kahler, J. Hahn, U. Kruger, M.W. Cunningham, C. Shimasaki, and R.E. Frye. Intravenous Immunoglobulin for the Treatment of Autoimmune Encephalopathy in Children with Autism. *Translational Psychiatry* **8**: 148 (2018).
- A. Sinkoe, A. Jayaraman, and J. Hahn. Dynamic Optimal Experimental Design Yields Marginal Improvement over Steady-state Results for Computational Maximization of Regulatory T Cell Induction in ex vivo Culture. *IET Systems Biology* **12**, No. 6, pp. 241-246 (2018).
- T. Vargason, D.P. Howsmon, and J. Hahn. From Data to Diagnosis: The Search for Biochemical Markers of Autism Spectrum Disorder. *Chemical Engineering Progress* **114**, No. 5, pp. 40-45 (2018).
- T. Vargason, U. Kruger, D.L. McGuinness, J.B. Adams, E. Geis, E. Gehn, D. Coleman, and J. Hahn. Investigating Plasma Amino Acids for Differentiating Individuals with Autism Spectrum Disorder and Typically Developing Peers. *Research in Autism Spectrum Disorders* **50**, pp. 60-72 (2018).
- D.P. Howsmon, J.B. Adams, U. Kruger, E. Geis, E. Gehn, and J. Hahn. Erythrocyte Fatty Acid Profiles in Children Are Not Predictive of Autism Spectrum Disorder Status: A Case Control Study. *Biomarker Research* **6**:12 (2018).
- D.P. Howsmon, N. Baysal, B.A. Buckingham, G.P. Forlenza, T.T. Ly, D.M. Maahs, T. Marcal, L. Towers, E. Mauritzen, S. Deshpande, L.M. Huyett, J.E. Pinsker, R. Gondhalekar, F.J. Doyle III, E. Dassau, J. Hahn, and B.W. Bequette. Real-time Detection of Infusion Site Failures in a Closed-Loop Artificial Pancreas. *Journal of Diabetes Science and Technology* **12**, No. 3, pp. 599-607 (2018).
- D.-W. Kang, Z.E. Ilhan, N.G. Isern, D.W. Hoyt, D.P. Howsmon, M. Shaffer, C.A. Lozupone, J. Hahn, J.B. Adams, and R. Krajmalnik-Brown. Differences in Fecal Microbial Metabolites and Microbiota of Children with Autism Spectrum Disorders. *Anaerobe* **49**, pp. 121-131 (2018).
- S. Steinmeyer, D.P. Howsmon, R.C. Alaniz, J. Hahn, and A. Jayaraman. Empirical Modeling of T cell Activation Predicts Interplay of Host Cytokines and Bacterial Indole. *Biotechnology & Bioengineering* **114**, No. 11, pp. 2660-2667 (2017).
- A. Sinkoe and J. Hahn. Optimal Experimental Design for Parameter Estimation of an IL-6 Signaling Model. *Processes* **5**, No. 3: 49 (2017).
- T. Vargason, D.P. Howsmon, D.L. McGuinness, and J. Hahn. On the Use of Multivariate Methods for Analysis of Data from Biological Networks. *Processes* **5**, No. 3: 36 (2017).
- Y. Fu, U. Kruger, Z. Li, L. Xie, J. Thompson, D. Rooney, J. Hahn, and H. Yang. Cross-validatory Framework for Optimal Parameter Estimation of KPCA and KPLS Models. *Chemometrics and Intelligent Laboratory Systems* **167**, pp. 196-207 (2017).
- D.P. Howsmon, U. Kruger, S. Melnyk, S.J. James, and J. Hahn. Classification and Adaptive Behavior Prediction of Children with Autism Spectrum Disorder based upon Multivariate Data Analysis of Markers of Oxidative Stress and DNA Methylation. *PLoS Computational Biology* 13(3): e1005385 (2017). **Journal Cover** and **AIChE CAST W. David Smith, Jr. Graduate Publication Award**
- J.B. Adams, D.P. Howsmon, U. Kruger, E. Geis, E. Gehn, V. Fimbres, E. Pollard, J. Mitchell, J. Ingram, R. Hellmers, D. Quig, and J. Hahn. Significant Association of Urinary Toxic Metals and

Autism-Related Symptoms - A Nonlinear Statistical Analysis with Cross Validation. *PLoS ONE* 12(1): e0169526 (2017).

- D.P. Howsmon, F. Cameron, N. Baysal, T.T. Ly, G.P. Forlenza, D.M. Maahs, B.A. Buckingham, J. Hahn, and B.W. Bequette. Continuous Glucose Monitoring Enables Detection of Losses in Infusion Set Actuation (LISAs). *Sensors* **17**(1), 161 (2017).
- T. Vargason, D.P. Howsmon, S. Melnyk, S.J. James, and J. Hahn. Mathematical Modeling of the Methionine Cycle and Transsulfuration Pathway in Individuals with Autism Spectrum Disorder. *Journal of Theoretical Biology* **416**, pp. 28-37 (2017).
- S. Tututi-Avila, L.A. Domínguez-Díaz, N. Medina-Herrera, A. Jiménez-Gutiérrez, and J. Hahn. Dividing-Wall Columns: Design and Control of a Kaibel and a Satellite Distillation Column for BTX Separation. *Chemical Engineering and Processing: Process Intensification* **114**, pp. 1-15 (2017).
- S. Tututi-Avila, N. Medina-Herrera, J. Hahn, and A. Jiménez-Gutiérrez. Design of an Energy-Efficient Side-Stream Extractive Distillation System. *Computers and Chemical Engineering* **102**, pp. 17-25 (2017).
- D. Howsmon and J. Hahn. Regularization Techniques to Overcome Over-Parameterization of Complex Biochemical Reaction Networks. *IEEE Life Science Letters* **2**, No. 3, pp. 31-34 (2016).
- J.A. Jones, V.R. Vernacchio, A.L. Sinkoe, S.M. Collins, M.H. Ibrahim, D.M. Lachance, J. Hahn, M.A. Koffas. Experimental and Computational Optimization of an Escherichia Coli Co-culture for the Efficient Production of Flavonoids. *Metabolic Engineering* **35**, pp. 55-63 (2016).
- V. Mahindrakar and J. Hahn. Model Predictive Control of Reactive Distillation for Benzene Hydrogenation. *Control Engineering Practice* **52**, pp. 103-113 (2016).
- T. Omer, X. Intes, and J. Hahn. Temporal Data Set Reduction Based on D-optimality for Quantitative FLIM-FRET Imaging. *PLoS ONE* 10(12): e0144421 (2015).
- P. Zhang, W. Dai, J. Hahn, and S.P. Gilbert. Drosophila Ncd Reveals an Evolutionarily Conserved Powerstroke Mechanism for Homodimeric and Heterodimeric Kinesin-14s. *PNAS* **112**, No. 20, pp. 6359-6364 (2015).
- G. Zheng, D. Howsmon, B. Zhang, J. Hahn, D. McGuinness, J. Hendler, and H. Ji. Entity linking for biomedical literature. *BMC Medical Informatics and Decision Making* **15**, No. S1, S4. (2015).
- S. Maiti, W. Dai, R. Alaniz, J. Hahn, and A. Jayaraman. Mathematical Modeling of Pro- and Anti-Inflammatory Signaling in Macrophages. *Processes* **3**. No. 1, pp 1-18 (2015).
- W. Dai, J. Kang, and J. Hahn. Reconstruction of Transcription Factor Profiles via Dynamic Optimization and Tikhonov Regularization. *AIChE Journal* **60**, No. 11, pp. 3754–3761 (2014).
- T. Omer, L. Zhao, X. Intes, and J. Hahn. Reduced Temporal Sampling Effect on Time-domain Fluorescence Lifetime FRET Accuracy. *Journal of Biomedical Optics* **19**, No. 8, 086023 (2014).
- J. Liu, W. Dai, and J. Hahn. Mathematical Modeling and Analysis of Crosstalk between MAPK Pathway and Smad-dependent TGF-β Signal Transduction. *Processes* **2**, No. 3, pp. 570-595 (2014).
- S. Tututi-Avila, A. Jimenez-Gutierrez, and J. Hahn. Control Analysis of an Extractive Dividing-Wall Column used for Ethanol Dehydration. *Chemical Engineering and Processing: Process Intensification* **82**, pp. 88-100 (2014).
- V. Mahindrakar and J. Hahn. Dynamics and Control of Benzene Hydrogenation via Reactive Distillation. *Journal of Process Control* **24**, pp. 113– 124 (2014).
- S. Tututi-Avila, A. Jimenez-Gutierrez, and J. Hahn. Analysis of Multi-loop Control Structures for Dividing-Wall Distillation Columns Using a Fundamental Model. *Processes* **2**, No. 1, pp. 180-199 (2014).
- W. Dai, L. Bansal, D. Word, and J. Hahn. Parameter Set Selection for Dynamic Systems under Uncertainty via Dynamic Optimization and Hierarchical Clustering **60**, No. 1, *AIChE Journal*, pp. 181–192 (2014). **Top Tier Contribution**
- A. Bhadouria, M. Sorci, M. Gu, G. Belfort, and J. Hahn. Optimization of Membrane Separation Processes for Protein Fractionation. *Industrial & Engineering Chemistry Research* **53**, No. 13, pp. 5103-5109 (2014).
- W. Dai, D. Word, and J. Hahn. Modeling and Dynamic Optimization of Fuel-grade Ethanol Fermentation Using Fed-batch Process. *Control Engineering Practice* **22**, pp. 231–241 (2014).
- L. Bansal, R. Nelson, E. Yang, A. Jayaraman, and J. Hahn. Experimental Design of Systems Involving Multiple Fluorescent Protein Reporters. *Chemical Engineering Science* **101**, pp. 191-198 (2013).

- Y. Chu and J. Hahn. Necessary Condition for Applying Experimental Design Criteria to Global Sensitivity Analysis Results. *Computers & Chemical Engineering* **48**, pp. 280-292 (2013).
- C. Kravaris, J. Hahn, and Y. Chu. Advances and Selected Recent Developments in State and Parameter Estimation. *Computers & Chemical Engineering* **51**, pp. 111-123 (2013). **Invited Paper**
- J. Hahn, C. Scali, M. Kano, C. Georgakis, L. Bergh, J.A. Moreno Perez, and K. Asano. Editorial: Special Issue Containing Selected Papers of the 18th IFAC World Congress. *Journal of Process Control* **23**, No. 2, pp. 99 (2013).
- M. Serpas, G. Hackebeil, C. Laird, and J. Hahn. Sensor Location for Nonlinear Dynamic Systems via Observability Analysis and Max-Det Optimization. *Computers & Chemical Engineering* **48**, No. 1, pp. 105-112 (2013).
- M. Serpas, Y. Chu, and J. Hahn. Fault Detection Approach for Systems Involving Soft Sensors. *Journal of Loss Prevention in the Process Industries* **26**, No. 3, pp 443-452 (2013).
- D.J. Munoz-Pinto, X. Qu, L. Bansal, H.N. Hayenga, J. Hahn, and M.S. Hahn. Relative Impact of Form-induced Stress vs. Uniaxial Alignment on Multipotent Stem Cell Myogenesis. *Acta Biomaterialia* **8**, No. 11, pp. 3974–3981 (2012).
- L. Bansal, Y. Chu, C. Laird, and J. Hahn. Regularization of Inverse Problems to Determine Transcription Factor Profiles from Fluorescent Reporter Systems. *AIChE Journal* **58**, No. 12, pp. 3751-3762 (2012).
- Z. Huang, Y. Chu, and J. Hahn. Computing Transcription Factor Distribution Profiles from Green Fluorescent Protein Reporter Data. *Chemical Engineering Science* **68**, No. 1, pp. 340-354 (2012).
- Y. Chu and J. Hahn. Generalization of a Parameter Set Selection Procedure based upon Orthogonal Projections and the D-Optimality Criterion. *AIChE Journal* **58**, No. 7, pp. 2085-2096 (2012).
- Y. Chu, M. Serpas, and J. Hahn. State-preserving Nonlinear Model Reduction Procedure. *Chemical Engineering Science* **66**, No. 17, pp. 3907-3913 (2011).
- Y. Chu, Z. Huang, and J. Hahn. Global Sensitivity Analysis Procedure Accounting for Effect of Available Experimental Data. *Industrial & Engineering Chemistry Research* **50**, No. 3, pp. 1294-1304 (2011).
- C. Moya, Z. Huang, P. Cheng, A. Jayaraman, and J. Hahn. Investigation of IL-6 and IL-10 Signaling via Mathematical Modeling. *IET Systems Biology* **5**, No. 1, pp. 15-26 (2011).
- Z. Huang, C. Moya, A. Jayaraman, and J. Hahn. Using the Tet-On System to Develop a Procedure for Extracting Transcription Factor Activation Dynamics. *Molecular BioSystems* **6**, No. 10, pp. 1883-1889 (2010).
- R. Kaunas, Z. Huang, and J. Hahn. A Kinematic Model Coupling Stress Fiber Dynamics with JNK Activation in Response to Matrix Stretching. *Journal of Theoretical Biology* **264**, No. 2, pp. 593-603 (2010).
- Y. Chu and J. Hahn. Quantitative optimal experimental design using global sensitivity analysis via quasi linearization. *Industrial & Engineering Chemistry Research* **49**, No. 17, pp. 7782-7794 (2010).
- Z. Huang, Y. Chu, and J. Hahn. Model Simplification Procedure for Signal Transduction Pathway Models: An Application to IL-6 Signaling. *Chemical Engineering Science* **65**, No. 6, pp. 1964-1975 (2010).
- Z. Huang, Y. Chu, B. Cunha, and J. Hahn. Generalization of a Procedure for Computing Transcription Factor Profiles. *IET Systems Biology* **4**, No. 2, pp. 108-118 (2010).
- Y. Chu, Z. Huang, and J. Hahn. Improving Prediction Capabilities of Complex Dynamic Models via Parameter Selection and Estimation. *Chemical Engineering Science* **64**, No. 19, pp. 4178-4185 (2009).
- A. McArdle, U. Kruger, and J. Hahn. Multivariate Statistical Analysis Applied to an IL6 Signal Transduction Model in Hepatocytes. *Statistics in Medicine* **28**, No. 10, pp. 2401-2434 (2009).
- Y. Chu and J. Hahn. Parameter Set Selection via Clustering of Parameters into Pair-wise Indistinguishable Groups of Parameters. *Industrial & Engineering Chemistry Research* **48**, No.13, pp. 6000-6009 (2009).
- C. Qu and J. Hahn. Process Monitoring and Parameter Estimation via Unscented Kalman Filtering. *Journal of Loss Prevention in the Process Industries* **22**, No. 6, pp. 703-709 (2009).
- Z. Huang and J. Hahn. Fuzzy Modeling of Signal Transduction Networks. *Chemical Engineering Science* **64**, No. 9, 2044-2056 (2009).

- C. Qu and J. Hahn. Computation of Arrival Cost for Moving Horizon Estimation via Unscented Kalman Filtering. *Journal of Process Control* **19**, No.2, 358-363 (2009).
- Z. Huang, F. Senocak, A. Jayaraman, and J. Hahn. Integrated Modeling and Experimental Approach for Determining Transcription Factor Profiles from Fluorescent Reporter Data. *BMC Systems Biology* **2**:64 (2008). **Highly Accessed**
- Y. Chu and J. Hahn. Integrating Parameter Selection with Experimental Design under Uncertainty for Nonlinear Dynamic Systems. *AIChE Journal* **54**, No. 9, pp. 2310-2320 (2008).
- J. Hahn, M. Mönnigmann, and W. Marquardt. On the Use of Bifurcation Analysis for Robust Controller Tuning for Nonlinear Systems. *Journal of Process Control* **18**, No. 3-4, pp. 408-420 (2008).
- J. Brewer, Z. Huang, A.K. Singh, M. Misra, and J. Hahn. Sensor Network Design via Observability Analysis and Principal Component Analysis. *Industrial & Engineering Chemistry Research* **46**, No. 24, pp. 8026-8032 (2007).
- Y. Chu and J. Hahn. Parameter Set Selection for Estimation for Nonlinear Dynamic Systems. *AIChE Journal* **53**, No. 11, pp. 2858-2870 (2007).
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- F. Qureshi, R. Krajmalnik-Brown, K. Nirmalkar, J.B. Adams, D.-W. Kang, and J. Hahn. Characterizing Microbial Taxa and Metabolic Pathways Trends Following Microbiota Transfer Therapy in Children with Autism Spectrum Disorder and Gastrointestinal Symptoms. AIChE 2021 Annual Meeting, Boston, Massachusetts (2021).

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- W. Dai, D. Word, and J. Hahn. Modeling and Dynamic Optimization of Fuel-Grade Ethanol Fermentation Using Fed-Batch Process. AIChE 2012 Annual Meeting, Pittsburgh, Pennsylvania (2012).
- L. Bansal, S. Maiti, A. Jayaraman, C. Laird, and J. Hahn. Modeling of Fluorescent Protein-Labeled Cell Populations to Analyze Transcriptional and Division Effects on Fluorescent Intensity Distributions. FOSBE 2012, Tsuruoka, Japan (2012).
- J. Hahn. Use of Systems Biology Concepts for Signal Transduction Pathway Modeling. Workshop on Model-based Analysis and Control of Cellular Processes, West Lafayette, Indiana (2012). **Invited Presentation**
- L. Bansal, Y. Chu, C. Laird, and J. Hahn. Regularization of Ill-Conditioned Inverse Problems Resulting From Determining Transcription Factor Profiles from Fluorescent Reporter Images. AIChE 2011 Annual Meeting, Minneapolis, Minnesota (2011).
- L. Bansal, E. Yang, R. Nelson, A. Jayaraman, and J. Hahn. Experimental Design of Systems Involving Multiple Fluorescent Reporters. AIChE 2011 Annual Meeting, Minneapolis, Minnesota (2011).
- J. Hahn and D.F. Shantz. REU Site: aterials and Systems Biology Research in Biotechnology and Biomedicine. AIChE 2011 Annual Meeting, Minneapolis, Minnesota (2011).
- Z. Huang, Y. Chu, L. Bansal, and J. Hahn. Derivation of Transcription Factor Distribution Profiles from Green Fluorescent Protein Reporter Data. AIChE 2010 Annual Meeting, Salt Lake City, Utah (2010). **Invited Presentation**
- M. Serpas and J. Hahn. Effect of Soft Sensor Dynamics on Process Monitoring. AIChE 2010 Annual Meeting, Salt Lake City, Utah (2010).

- C. Moya, Z. Huang, J. Hahn, and A. Jayaraman. Quantitative Determination of Transcription Factor Profiles from Reporter Data. AIChE 2010 Annual Meeting, Salt Lake City, Utah (2010).
- Y. Chu, Z. Huang, M. Serpas, and J. Hahn. Global Sensitivity Analysis Procedure Accounting for Effect of Available Experimental Data. AIChE 2010 Annual Meeting, Salt Lake City, Utah (2010).
- Z. Huang, C. Moya, P. Cheng, A. Jayaraman, and J. Hahn. Mathematical Modeling of IL-6 and IL-10 Signal Transduction in Steatosis. AIChE 2009 Annual Meeting, Nashville, Tennessee (2009).
- Y. Chu and J. Hahn. A New Global Sensitivity Analysis Procedure Involving Quasi Linearization for Optimal Experimental Design. AIChE 2009 Annual Meeting, Nashville, Tennessee (2009).
- Z. Huang, Y. Chu, and J. Hahn. Derivation of Reduced Models for Signal Transduction Pathways via Sensitivity and Observability Analysis. AIChE 2009 Annual Meeting, Nashville, Tennessee (2009).
- R. Kaunas, Z. Huang, and J. Hahn. A Kinematic Model Coupling Stress Fiber Dynamics with JNK Activation in Response to Matrix Stretching. 2009 Summer Bioengineering Conference, Lake Tahoe, California (2009).
- Z. Huang, F. Senocak, A. Jayaraman, and J. Hahn. Quantitative Measurement Technique for Transcription Factor Profiles. AIChE 2008 Annual Meeting, Philadelphia, Pennsylvania (2008).
- Y. Chu, Z. Huang, and J. Hahn. Analysis Procedure for Signal Transduction Pathways by Clustering Parameters According to their Sensitivity Profiles. AIChE 2008 Annual Meeting, Philadelphia, Pennsylvania (2008).
- C. Qu and J. Hahn. Computation of Arrival Cost for Moving Horizon Estimation via Unscented Kalman Filtering. AIChE 2008 Annual Meeting, Philadelphia, Pennsylvania (2008).
- Y. Chu and J. Hahn. Parameter Set Selection Via Clustering of Parameters into Pair-Wise Indistinguishable Groups of Parameters. AIChE 2008 Annual Meeting, Philadelphia, Pennsylvania (2008).
- Y. Chu, Z. Huang, and J. Hahn. Sensitivity Analysis used for Parameter Estimation of Signal Transduction Networks. SIAM Conference on the Life Sciences, Montreal, Canada (2008). **Invited Presentation**
- E.P. Gatzke and J. Hahn. Cache Virtual Process Control Book: Online Resources for Graduate Process Control Instruction. AIChE 2007 Annual Meeting, Salt Lake City, Utah (2007).
- Y. Chu, R. Cox, M. Misra and J. Hahn. Parameter Set Selection for Estimation of Nonlinear Dynamic Systems. AIChE 2007 Annual Meeting, Salt Lake City, Utah (2007).
- Y. Chu and J. Hahn. Analysis of Interactions among the Components in the Il-6 Signaling Pathways. AIChE 2007 Annual Meeting, Salt Lake City, Utah (2007).
- Z. Huang and J. Hahn. Development and Comparison of Algorithms for Analysis of Fluorescent Images for Studying the Dynamics of Signal Transduction Pathways. AIChE 2007 Annual Meeting, Salt Lake City, Utah (2007).
- P. Balbuena, J. Hahn, and V. Ugaz. Integrating Current Research Trends in Undergraduate Education. 2007 Engineering Education NSF Awardees Conference, Arlington, Virginia (2007).
- C. Qu and J. Hahn. Process Monitoring and Parameter Estimation via Unscented Kalman Filtering. AIChE 2007 Spring National Meeting, Houston, Texas (2007).
- Y. Chu and J. Hahn. Development of Parameter Sensitivity Analysis Technique for Studying Interactions among Parameters and Application to Systems Biology. *5th International Conference On Differential Equations and Dynamical Systems*, Edinburg, Texas (2006). **Invited Presentation**
- Y. Chu, A.K. Singh, A. Jayaraman, and J. Hahn. Sensitivity Analysis-Based Approach for Identifying Key Steps in Cell Signaling for Hepatocytes Stimulated by Il-6. *AIChE 2006 Annual Meeting*, San Francisco, California (2006).
- A.K. Singh and J. Hahn. Computing Sensor Locations for Nonlinear Systems under the Influence of Disturbances. *AIChE 2006 Annual Meeting*, San Francisco, California (2006).
- J. Brewer, A.K. Singh, M. Misra, and J. Hahn. Sensor Network Design Via Observability Analysis and Principal Component Analysis. *AIChE 2006 Annual Meeting*, San Francisco, California (2006).
- J. Hahn. Nonlinear Model Reduction and its Application to Model Predictive Control. Conference on Adaptive Model Reduction Methods for PDE Constrained Optimization, Houston, Texas (2006). **Invited Presentation**
- C. Sun and J. Hahn. Parameter Reduction for Nonlinear Models Based on Hankel Singular Values and Sensitivity Analysis. *AIChE 2005 Annual Meeting*, Cincinnati, Ohio (2005).

- A.K. Singh and J. Hahn. Determining Sensor Locations for Stable Nonlinear Systems: the Multiple Sensor Case. *AIChE 2005 Annual Meeting*, Cincinnati, Ohio (2005).
- A.K. Singh, A. Jayaraman, and J. Hahn. Mathematical Model of Il-6 Signal Transduction in Hepatocytes. *AIChE 2005 Annual Meeting*, Cincinnati, Ohio (2005).
- U. Krüger, D. Antory, J. Hahn, G.W. Irwin, and G. McCullough. Introduction of a Nonlinearity Measure for Principal Component Models. *Symposium on Modeling of Complex Processes,* College Station, Texas (2005).
- A.K. Singh and J. Hahn. Reduced-Order Observers for High-Dimensional Chemical Processes. *Symposium on Modeling of Complex Processes,* College Station, Texas (2005).
- A.K. Singh and J. Hahn. Reduced-Order Observers for High-Dimensional Chemical Processes. *AIChE 2004 Annual Meeting,* Austin, Texas (2004).
- S. Rajaraman, M.S. Mannan, and J. Hahn. Robust Fault Detection, Isolation, and Reconstruction for Nonlinear Processes with Parametric Uncertainties. *AIChE 2004 Annual Meeting*, Austin, Texas (2004).
- C. Sun and J. Hahn. Nonlinear Model Reduction of DAE Systems. *AIChE 2004 Annual Meeting,* Austin, Texas (2004).
- A.K. Singh and J. Hahn. Determining Optimal Sensor Locations for Parameter Estimation via Covariance Matrices. *AIChE 2004 Annual Meeting*, Austin, Texas (2004).
- J. Hahn, M. Mönnigmann, and W. Marquardt. Determining the Effect of Model Uncertainty on Controller and Observer Design via Bifurcation Analysis. *AIChE 2003 Annual Meeting*, San Francisco, California (2003).
- J. Hahn. Nonlinear Model Reduction and its Application to Model Predictive Control. *Model Reduction for Process Control Workshop, Lund, Sweden* (2002). **Invited Presentation**
- J. Hahn and T.F. Edgar. Nonlinearity Quantification and Model Classification using Gramians and other Variance Matrices. *AIChE 2001 Annual Meeting*, Reno, Nevada (2001).
- J. Hahn, S. Lextrait, and T.F. Edgar. Nonlinear Balanced Model Residualization via Neural Networks. *AIChE 2000 Annual Meeting*, Los Angeles, California (2000).

INVITED TALKS

- Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Data Science Meets Metabolomics. Foundations of Systems Biology in Engineering, August 29, 2022. Cambridge, Massachusetts.
- Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Data Science Meets Metabolomics. Ezra's Round Table Systems Seminar, Cornell University, March 11, 2022, Ithaca, New York.
- Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Data Science Meets Metabolomics. Department of Biomedical Engineering, New York University, November 23, 2021, New York City, New York.
- Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Big Data Meets Metabolomics. CCEC-71st Canadian Chemical Engineering Conference, October 24-27, 2021, Montreal, Canada.
- Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Data Science Meets Metabolomics. Department of Biomedical Engineering, Columbia University, September 24, 2021, New York City, New York.
- Machine Learning of Metabolomics Data of Folate-Dependent One-Carbon Metabolism and Transsulfuration Pathways in Autism Spectrum Disorder. Synchrony 2020, December 13, 2020, Virtual Conference.
- Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Big Data Meets Metabolomics. Department of Bioengineering, University of Illinois – Urbana Champaign, April 7, 2020, Urbana, Illinois. – Cancelled last minute due to COVID-19
- Integrating Data Science Advances into Chemistry and Chemical Engineering Curriculums. Board on Chemical Sciences and Technology, National Academies of Sciences, Engineering, and Medicine, August 23, 2019, Washington, D.C.

- Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Big Data Meets Metabolomics. School of Chemical Engineering, Oklahoma State University, October 9, 2018, Stillwater, Oklahoma.
- Towards the Development of a Diagnostic Test for Autism Spectrum Disorder: Big Data Meets Metabolomics. Department of Chemical Engineering, Worcester Polytechnic Institute, April 18, 2018, Worcester, Massachusetts.
- Role of Folate-Dependent One-Carbon Metabolism and Transulfuration Pathways in Autism Spectrum Disorder. Bioengineering & Translational Medicine Conference, October 29, 2017, Minneapolis, Minnesota.
- Personalized Medicine: Importance of Estimating Model Parameters. Department of Physics, Morehouse College, September 8, 2016, Atlanta, Georgia.
- Regularization Techniques for Biochemical Reaction Networks. Northeast Bioengineering Conference, April 6, 2016. SUNY Binghamton, Binghamton, New York.
- Regularization Techniques for Biochemical Reaction Networks. Modeling Life in the Lab Symposium, September 18, 2015. The Carey Institute for Global Good, Rensselaerville, New York.
- Regularization Techniques for Biochemical Reaction Networks. Foundations of Systems Biology in Engineering, August 11, 2015. Cambridge, Massachusetts.
- Signal Transduction Pathway Modeling: Investigation and Challenges of IL-6 Signaling. Department of Biomedical Engineering, Columbia University, May 1, 2015, New York City, New York.
- Personalized Medicine: Importance of Estimating Model Parameters. ASME-Hudson Mohawk Section, March 19, 2015. Latham, New York.
- Signal Transduction Pathway Modeling: Investigation and Challenges of IL-6 Signaling. Department of Chemical Engineering, Queen's University, January 15, 2015, Kingston, Ontario, Canada.
- Signal Transduction Pathway Modeling: Investigation and Challenges of IL-6 Signaling. Process Systems Engineering Laboratory, Massachusetts Institute of Technology, July 18, 2014, Cambridge, Massachusetts.
- Use of Systems Biology Concepts for Signal Transduction Pathway Modeling. Icahn School of Medicine, Mount Sinai, March 18, 2014, New York City, New York.
- Use of Systems Biology Concepts for Signal Transduction Pathway Modeling. Department of Chemical Engineering, University of Massachusetts at Amherst, November 13, 2012, Amherst, Massachusetts.
- Use of Systems Biology Concepts for Signal Transduction Pathway Modeling. Workshop on Model-based Analysis and Control of Cellular Processes, Purdue University, October 9, 2012, West Lafayette, Indiana.
- Use of Systems Biology Concepts for Signal Transduction Pathway Modeling. Department of Chemical & Biological Engineering, Rensselaer Polytechnic Institute, October 3, 2012, Troy, New York.
- Use of Systems Biology Concepts for Signal Transduction Pathway Modeling. Department of Biology, Rensselaer Polytechnic Institute, September 24, 2012, Troy, New York.
- Developing Improved Models of Signal Transduction Pathways via Systems Biology. Department of Chemical Engineering, University of Texas at Austin, September 13, 2011, Austin, Texas.
- Developing Improved Models of Signal Transduction Pathways via Systems Biology. Department of Biomedical Engineering, Rensselaer Polytechnic Institute, May 19, 2011, Troy, New York.
- Developing Improved Models of Signal Transduction Pathways via Systems Biology. Department of Chemical and Biomolecular Engineering, Cornell University, March 14, 2011, Ithaca, New York.
- Developing Improved Models of Signal Transduction Pathways via Systems Biology. Department of Chemical Engineering, University of Arkansas, December 7, 2010, Fayetteville, Arkansas.
- Educating the Automation Professionals - Are Our Colleges and Industry Doing Enough? ISA Automation Week, October 5, 2010, Houston, Texas.
- Nonlinear Model Reduction. Air Liquide Delaware Research & Technology Center, September 16, 2010, Newark, Delaware.
- Connecting Academia to Industry - Trends in Engineering Programs, Curriculums, and Workforce Development. ISA Expo, October 6, 2009, Houston, Texas.

- Developing Improved Models of Signal Transduction Pathways via Systems Biology. Department of Electrical and Computer Engineering, Texas A&M University, September 29, 2009, College Station, Texas.
- Developing Improved Models of Signal Transduction Pathways via Systems Biology. School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, January 14, 2009, Atlanta, Georgia.
- Sensitivity Analysis used for Parameter Estimation of Signal Transduction Networks. SIAM Conference on the Life Sciences, August 4, 2008, Montreal, Canada.
- Computing Transcription Factor Concentrations from Green Fluorescent Protein Reporter System Data. National Taiwan University, July 14, 2008, Taipei, Taiwan.
- Fuzzy Modeling of Signal Transduction Networks. International Federation of Automatic Control World Congress, July 11, 2008, Seoul, Korea.
- Modeling Regulatory Mechanisms in IL-6 Signal Transduction in Hepatocytes, Department of Chemical and Petroleum Engineering, University of Pittsburgh, March 23, 2007, Pittsburgh, Pennsylvania.
- Development of Parameter Sensitivity Analysis Technique for Studying Interactions among Parameters and Application to Systems Biology. 5th International Conference On Differential Equations and Dynamical Systems, University of Texas-Pan American, December 16, 2006, Edinburg, Texas.
- Modeling Regulatory Mechanisms in IL-6 Signal Transduction in Hepatocytes, Department of Chemical Engineering, Auburn University, November 29, 2006, Auburn, Alabama.
- Nonlinear Model Reduction and its Application to Model Predictive Control. Conference on Adaptive Model Reduction Methods for PDE Constrained Optimization, Rice University, May 18, 2006, Houston, Texas.
- Nonlinear Model Reduction and its Application to Model Predictive Control. Department of Computational & Applied Mathematics, Rice University, April 17, 2006, Houston, Texas.
- Determining Optimal Sensor Locations for State and Parameter Estimation. ExxonMobil, April 12, 2006, Baytown, Texas.
- Determining Optimal Sensor Locations for State and Parameter Estimation. Texas-Wisconsin Modeling and Control Consortium, University of Texas at Austin, February 7, 2005, Austin, Texas.
- Analysis and Order Reduction of Nonlinear Systems and Application to Model Predictive Control. Department of Chemical Engineering, Worcester Polytechnic Institute, March 19, 2004, Worcester, Massachusetts.
- Modeling, Analysis, Optimization and Control of Complex Dynamic Systems. Catalytic Distillation Technologies, October 9, 2003, Pasadena, Texas.
- Modeling, Analysis, Optimization and Control of Complex Dynamic Systems. Shell, August, 2003, Houston, Texas.
- Analysis and Order Reduction of Nonlinear Systems and Application to Model Predictive Control. School of Electrical & Electronic Engineering, Queen's University Belfast, March 13, 2003, Belfast, United Kingdom.
- Nonlinear Model Reduction and its Application to Model Predictive Control. Center for Chemical Process Design and Control, Lund Institute of Technology, November 18, 2002, Lund, Sweden.
- Analysis of Nonlinear Systems via Controllability and Observability Covariance Matrices. Department of Chemical Engineering, Purdue University, April 2, 2002, West Lafayette, Indiana.
- Analysis of Nonlinear Systems via Controllability and Observability Covariance Matrices. Department of Chemical Engineering, University of Massachusetts at Amherst, March 14, 2002, Amherst, Massachusetts.
- Analysis of Nonlinear Systems via Controllability and Observability Covariance Matrices. Department of Chemical Engineering, Texas A&M University, January 10, 2002, College Station, Texas.
- Analysis of Nonlinear Systems via Controllability and Observability Covariance Matrices. Department of Chemical Engineering, Georgia Institute of Technology, January 7, 2002, Atlanta, Georgia.
- Analysis of Nonlinear Systems via Controllability and Observability Covariance Matrices. Institut für Systemtheorie Technischer Prozesse, Universität Stuttgart, May 14, 2001, Stuttgart, Germany.

- Analysis of Nonlinear Systems via Controllability and Observability Covariance Matrices. Max Planck Institut für Dynamik komplexer technischer Systeme, May 9, 2001, Magdeburg, Germany.
- Analysis of Nonlinear Systems via Controllability and Observability Covariance Matrices. Lehrstuhl für Prozesstechnik, RWTH Aachen, May 7, 2001, Aachen, Germany.

PATENTS AND PATENT APPLICATIONS

- J. Hahn, T. Vargason, and U. Kruger. Use of Multivariate Analysis to Assess Treatment Approaches. U.S. Patent Application No. 17/413,354, 2022.
- J. Adams, J. Hahn, and H. Guo. Diagnostic for Childhood Risk of Autism Spectrum Disorder. U.S. Patent Application No. 17/601,235, 2022.
- J. Adams and J. Hahn. Diagnostic for Maternal Risk of Having a Child with Autism Spectrum Disorder. U.S. Patent Application No. 17/601,582, 2022.
- J. Adams, J. Hahn, D.-W. Kang, and R. Krajmalnik-Brown. Metabolites as Diagnostics for Autism Spectrum Disorder in Children with Gastrointestinal Symptoms. U.S. Patent Application No. 17/601,219, 2022.
- G. Wang, M. Kalra, J. Hahn, U. Kruger, W. Cong, and H. Shan. Systems and Methods for Integrating Tomographic Image Reconstruction and Radiomics using Neural Networks. US Patent 11,049,244, 2021.
- J. Hahn, D. Howsmon, and U. Kruger. Method for Predicting Autism. U.S. Patent Application No. 16/002,329, 2018.