

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Daniel E. Rivera		POSITION TITLE Professor, School for Engineering of Matter, Transport, and Energy	
eRA COMMONS USER NAME (credential, e.g., agency login) drivera			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Rochester, Rochester, NY	B.S.	5/82	Chemical Engineering
University of Wisconsin, Madison, WI	M.S.	12/84	Chemical Engineering
California Institute of Technology	Ph.D.	6/87	Chemical Engineering

A. Personal Statement

I am a chemical engineer with 25 years experience in the field of control systems engineering. Since 2007 I have principally devoted my efforts primarily towards applying systems science concepts from dynamical systems and control engineering for modeling and optimizing interventions in behavioral health (<http://cse.asu.edu/health>). Subject areas that have spanned my work include prevention and treatment of drug abuse, obesity, smoking, and chronic pain. I have received a K25 Mentored Quantitative Research Scientist Award from NIDA, and serve as co-PI (with Linda Collins at Penn State University) in an NIH R21 roadmap grant that is facilitating interdisciplinary innovation in the behavioral and social sciences. My involvement in problems in behavioral health has been highly visible among both the behavioral health and control engineering communities, with invited talks at multiple workshops, and annual meetings of the Society for Behavioral Medicine, the Society for Prevention Research, and the American Automatic Control Council. In July 2012 I delivered a plenary talk at the 16th International Federation of Automatic Control (IFAC) Workshop on System Identification (SYSID 2012) in Brussels, Belgium describing my efforts in modeling and optimizing behavioral interventions.

B. Positions and HonorsPositions and Employment

1987-1990 Associate Research Engineer, Control Systems Section, Shell Development Company.
1990- Professor of Chemical Engineering, Arizona State University, Tempe, Arizona;
2004- Affiliated Professor of Electrical Engineering, Arizona State University, Tempe, Arizona

Other Experience and Professional Memberships

1982- Senior Member, American Institute of Chemical Engineers (AIChE)
1990- Senior Member, Institute of Electrical and Electronic Engineers (IEEE)
1990- Professional Member, American Society for Engineering Education (ASEE)
1996 Gästforskare (Guest Researcher), Division of Automatic Control, Department of Electrical Engineering, Linköping University, Sweden
1997 Visiting Professor, Honeywell Technology Center, Phoenix, Arizona.
2003-2007 Associate Editor, *IEEE Control Systems Magazine*
2003-2010 Associate Editor, *IEEE Transactions on Control Systems Technology*
2005- Member, Society for Prevention Research (SPR)
2007- Chair, IEEE CSS Technical Committee on System Identification and Adaptive Control
2011- Member, Society of Behavioral Medicine

Honors

1978	Presidential Scholar – Puerto Rico
1981	Elected to Tau Beta Pi
1982	Elected to Phi Beta Kappa
1982	Thomas J. Walter Prize for Excellence in Computer Applications, U. of Rochester
1995	Outstanding Undergraduate Educator, ASU AIChE Student Chapter.
1998	Teaching Excellence Award, ASU College of Engineering.
2005	Honorable Mention, CAST Director's Award, 2005 AIChE Annual Meeting
2007	NIH K25 Mentored Quantitative Research Development Award
2012	Plenary speaker, 16 th IFAC Symposium on System Identification (SYSID 2012)

C. Selected Peer-reviewed Publications

1. Rivera, D.E., M.D. Pew, and L.M. Collins, "Engineering approaches for the design and analysis of adaptive, time-varying interventions," *Drug and Alcohol Dependence*, Special Issue on Adaptive Treatment Strategies, Vol. 88, Supplement 2, pgs. S31-S40, (2007). PMID: PMC2062527.
2. Navarro-Barrientos, J.E., D.E. Rivera, and L.M. Collins, "A dynamical systems model for understanding behavioral interventions for weight loss," published in S.-K. Chai, J.J. Salerno, and P.L. Mabry (Eds.): *2010 International Conference on Social Computing, Behavioral Modeling, and Prediction (SBP 2010)*, LNCS 6007, pp. 170-179. Springer, Heidelberg (2010). PMID: PMC2907677.
3. Nandola, N. and D.E. Rivera, "A novel Model Predictive Control formulation for hybrid systems with application to adaptive behavioral interventions," *Proc. of the 2010 American Control Conference*, Baltimore, MD, June 30 - July 2, 2010, pp. 6286-6292 (2010). PMID: PMC2935661.
4. Nandola, N. and D.E. Rivera, "Model-on-Demand Predictive Control formulation for nonlinear hybrid systems with application to adaptive behavioral interventions," *49th IEEE Conference on Decision and Control*, Atlanta, GA, December 15 – 17, 2010, pp. 6113 - 6118 (2010).
5. Riley, W.T., D.E. Rivera, A. A. Autienza, W. Nilsson, S. Allison, and R. Mermelstein, "Health behavior models in the age of mobile interventions: are our theories up to the task?" *Translational Behavioral Medicine: Practice, Policy, Research*, Vol. 1, No. 1, pgs. 53 – 71, (2011). PMID: PMC3142960.
6. Navarro-Barrientos, J.E., D.E. Rivera, and L.M. Collins, "A dynamical model for describing behavioural interventions for weight loss and body composition change," *Mathematical and Computer Modelling of Dynamical Systems*, Vol. 17, No. 2, pgs 183-203, (2011). PMID: PMC3111923.
7. Zafra-Cabeza A., D.E. Rivera, L.M. Collins, E.F. Camacho, and M.A. Ridao, "A risk-based Model Predictive Control approach to adaptive interventions in behavioral health," *IEEE Transactions on Control Systems Technology*, Vol. 19, No. 4, pgs. 891 – 901, (2011). PMID: PMC3107527.
8. Deshpande, S., N. Nandola, D.E. Rivera, and J. Younger, "A control engineering approach to designing an optimized treatment plan for fibromyalgia," *Proceedings of the 2011 American Control Conference*, San Francisco, CA, June 29 – July 1, 2011, pp. 4798-4803 (2011).
9. Roche, K.T., D.E. Rivera, and J.K. Cochran, "A control engineering framework for managing whole hospital occupancy," *Mathematical and Computer Modelling*, Volume 55, Issues 3-4, pgs. 1401-1417, (2012).
10. Nandola, N. and D.E. Rivera, "An improved formulation of hybrid predictive control with application to production-inventory systems," *IEEE Transactions on Control Systems Technology*, early access: <http://dx.doi.org/10.1109/TCST.2011.2177525>.
11. Thomas, D.M., J.E. Navarro-Barrientos, D.E. Rivera, S.B. Heymsfield, C. Bredlau, L.M. Redman, C.K. Martin, S.A. Lederman, L.M. Collins, and N.F. Butte, "Dynamic energy-balance model predicting gestational weight gain," *American Journal of Clinical Nutrition*, Vol. 95, pgs. 115-122, January, 2012.
12. Dong, Y., D.E. Rivera, D.M. Thomas, J.E. Navarro-Barrientos, D.S. Downs, J.S. Savage, and L.M. Collins, "A dynamical systems model for gestational weight gain behavioral interventions," *Proceedings of the 2012 American Control Conference*, Montreal, Canada, pgs. 4059-4064, (2012).
13. Deshpande, S., D.E. Rivera, and J. Younger, "Towards patient-friendly input signal design for optimized pain treatment interventions," *16th IFAC Symposium on System Identification (SYSID 2012)*, Brussels, Belgium, pgs. 1311 – 1316, (2012).

14. Timms, K.P., D.E. Rivera, L.M. Collins, and M.E. Piper, "System identification modeling of a smoking cessation intervention," *16th IFAC Symposium on System Identification (SYSID 2012)*, Brussels, Belgium, pgs. 786 – 791, (2012).
15. Rivera, D.E., "Optimized behavioral interventions: what does system identification and control systems engineering have to offer?" plenary paper, *16th IFAC Symposium on System Identification (SYSID 2012)*. Brussels, Belgium, pgs. 882 – 893, (2012).

D. Research Support

On-Going Research Support

K25 DA021173-05 (Rivera, PI) 9/30/07-8/31/13,
K25 Mentored Quantitative Research Career Development Award: Control Engineering Approaches to Adaptive Interventions for Fighting Drug Abuse
Description: This project is examining how concepts stemming from control systems engineering can be used to improve the analysis, design, and implementation of optimized adaptive interventions for prevention and treatment of drug abuse.
Role: PI

R21 DA024266-04 (Collins, PI) 9/26/07-7/31/13,
R21 Facilitating Interdisciplinary Research via Methodological and Technological Innovation in the Behavioral and Social Sciences: Dynamical Systems and Related Approaches to Improving Behavioral Interventions
Description: This project is examining how to model behavioral interventions associated with prevention and treatment of substance abuse, obesity, cigarette smoking, and mental health as multivariate dynamical systems, which are then amenable to optimization techniques leading to improved outcomes.
Role: co-PI

American Heart Association (Rivera, PI) 7/1/12-6/30/2014
A Novel Engineering Approach to Modeling and Optimizing Smoking Cessation Interventions: American Heart Association Fellowship for Kevin P. Timms.
Role: PI

National Science Foundation (McHenry, PI) 3/1/05-3/31/13,
More Graduate Education at Mountain States Alliance (MGE@MSA) AGEP Phase II
Description: This project aims at increasing the number of underrepresented students obtaining a doctoral degree in the fields of science, technology, engineering and mathematics (STEM).
Role: co-PI

Completed Research Support (last 5 years)

National Science Foundation (Rivera, PI)
Project Dates: 10/1/04-9/31/07,
Project Title: GOALI: Process Control Approaches to Supply Chain Management in Semiconductor Manufacturing
Description: This project involves collaboration between various departments at ASU (chemical engineering, computer science, and mathematics) and technical leaders at Intel Corp. to build a novel, scaleable simulation and decision support environment for supply chain management in semiconductor manufacturing based on process control approaches.
Role: PI

Program Director/Principal Investigator (Last, First, Middle):

Intel Research Council (Rivera, PI)

Project Dates: 12/1/04-11/30/07,

Project Title: Improving Short-Term Demand Forecasting in Supply Chains

Description: This project extends ideas from control-relevant system identification to enable the development of more effective forecasts for tactical decision policies in supply chain management.

Role: PI

Overlap

None