CURRICULUM VITAE

Lisa M. Kuhn
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EDUCATION

2011   Ph.D. Computational Analysis and Modeling, Louisiana Tech University
Research: Modeling and Control Strategies for Heave Dynamics of an Aeroelastic Wing Micro Aerial Vehicle
Advisor: Dr. Katie A. Evans

2009   M.S. Mathematics, Louisiana Tech University
Advisor: Dr. Katie A. Evans

2006   B.S. Mathematics Education, Louisiana College

ACADEMIC EXPERIENCE

2018-present   <u>Assistant Professor, Southeastern Louisiana University, Hammond, Louisiana.</u>
- Tasks include teaching, conducting research and participating in scholarly activities.
- Courses taught or presently teaching:
  - CMPS 443 (Simulation and Modeling)
  - Math 162 (Trigonometry)
  - Math 175 (Pre-Calculus)
  - Math 200 (Calculus I)
  - Math 350 (Ordinary Differential Equations)
  - Math 392 (Numerical Methods)
  - Math 402/502 (Partial Differential Equations)
  - Math 407 (Topics in Math – Numerical Analysis).

2011 – 2018   <u>Visiting Assistant Professor, Southeastern Louisiana University, Hammond, Louisiana.</u>
- Duties include teaching twelve hours per semester and conducting research and scholarly activities.
- Courses taught or presently teaching:
  - CMPS 443/543 (Simulation and Modeling)
  - ET 410 (Signals and Systems)
  - Math 92 (Transitional Math)
  - Math 161H (Honors College Algebra)
  - Math 162 (Trigonometry)

- o Math 163 (Calculus for the Biological, Business and Social Sciences)
- o Math 165 (Pre-Calculus)
- o Math 200 (Calculus I)
- o Math 201 (Calculus II)
- o Math 312 (Calculus III)
- o Math 350 (Ordinary Differential Equations)
- o Math 392 (Numerical Methods)
- o Math 402 (Partial Differential Equations)
- o Math 407 (The Finite Element Method).
- Curriculum planning has been done for the following courses:
  - o CMPS 443/543 (Simulation and Modeling)
  - o ET 410 (Signals and Systems)
  - o Math 392 (Numerical Methods)
  - o Math 402 (Partial Differential Equations)
  - o Math 407 (The Finite Element Method).

2007-2009, 2010-2011   Graduate Teaching Assistant, Louisiana Tech University. Ruston, Louisiana.
- Duties comprised of teaching one course per quarter with full responsibility.
- Courses taught:
  - o Math 099 (Preparation for College Math)
  - o Math 101 (College Algebra)
  - o Math 242 (Integral Calculus for Engineers)
  - o Math 242 (Honors Integral Calculus).
- Guest lectured for the following course: Math 240 (Pre-Calculus).

2009-2010   National Science Foundation GK-12 Teaching Fellow.
- Tasks included teaching labs, designing curricula, and integrating research into middle school and high school math and science classrooms.

2009   NSF'S Research Experience for Teachers Program
- The six-week program involved mentoring teachers, leading and teaching labs, enabling teachers to disseminate advanced STEM concepts, equipping them with ideas for incorporating research into the K-12 classroom, and lab assistance.

2009   Louisiana Tech University's NanoScholars Program
- Tasks involved leading labs for teachers and providing them with knowledge of nanotechnology.

2007-2008   Math Teacher, Sylvan Learning Center. Monroe, Louisiana.
- Responsibilities consisted of tutoring and teaching math and reading to students on the elementary school level through the college level.

2006-2007	<u>Math Teacher, Franklinton High School. Franklinton, Louisiana.</u>

- Subjects taught: Algebra II, Calculus, Geometry, and LEAP/GEE Summer School.
- Offered and began position as an undergraduate student.

RESEARCH INTERESTS AND EXPERIENCE

2017 – present	Employing modified bases using cubic, quintic, and bi-cubic splines for simulating multiple component structures.
2017 – present	Analyzing Matlab's software performance with embedded high level languages.
2012 – 2015	Investigating state estimation for partial differential equation systems containing strong nonlinearities and incorporating special hysteresis damping into a beam-mass-beam model.
2009 – 2016	Applying tools from distributed parameter control theory as a means towards the development of a realistic heave dynamics model for flexible wing micro aerial vehicles that may be exploited for control design.
2014 – 2015	Examining numerical instabilities and optimal numerical methods associated with the Analytic Continuation of the Coupling Constant (ACCC Method) and molecular modeling.
Summer 2010	Research on target tracking strategies for a nonlinear, flexible aircraft-inspired model through the Air Force Summer Faculty Fellowship Program under the advisement of Dr. Katie A. Evans.
Summer 2009	Lab experience studying the toxicity of metal nanoparticle mixtures in aquatic systems.

PEER-REVIEWED PUBLICATIONS

L. Kuhn, S. Russell, M. Boudreaux, J. Gaboury, and B. Maulding. "Development of a Rapid First-Order Differential Equation Solver for Stiff Systems," Proceedings of the 17th International Conference on Scientific Computing, Las Vegas, NV, July 2019.

C. Ennis, **L. Kuhn**, A. Sievers, and S. Russell. "An Analysis of MATLAB's Software Performance Interfaced With High-Level C Language for Expediting Numerical Integration Techniques," *Journal of Computing Sciences in Colleges*, 33:4, pages 84-91, April 2018.

A. Chakravarthy, K. Evans, **L. Kuhn**, and J. Walters. "Frequency and Time Domain Analysis of a Flexible Wing Micro Aerial Vehicle Distributed Parameter System," *Numerical Functional Analysis and Optimization*, 36:9, pages 1122-1152, July 2015.

J. Walters, K Evans, A. Chakravarthy, and **L. Kuhn**. "A Comparison of Morphing Control Strategies for a Flexible Wing Micro Air Vehicle Model Incorporating Spatial Hysteresis Damping." Proceedings of the 53rd IEEE Conference on Decision and Control, Los Angeles, CA, December 2014.

A. Chakravarthy, K. Evans, J. Evers, and **L. Kuhn**. "Nonlinear Controllers for Wing Morphing Trajectories of a Heave Dynamics Model." Proceedings of the 50th IEEE Conference on Decision and Control and European Control Conference, Orlando, FL, December 2011.

A. Chakravarthy, K. Evans, J. Evers, and **L. Kuhn**. "Target Tracking Strategies for a Nonlinear, Flexible Aircraft-Inspired Model." Proceedings of the 2011 American Control Conference, pages 1783-1788, June 2011.

INVITED PRESENTATIONS

L. Kuhn. "Finite Element Solutions of Flexible Structures Using Modified Quintic B-Splines and a Native ODE Solver." 2019 Annual Meeting of the SIAM Texas-Louisiana Section, Baton Rouge, LA. November 2, 2019.

L. Kuhn. "Modified Spline Basis Functions for Simulating PDE Systems using the Finite Element Method." 2018 Annual Meeting of the SIAM Texas-Louisiana Section, Baton Rouge, LA. October 7, 2018.

A. Chakvarthy, K. Evans, J. Evers, **L. Kuhn.** "Two Nonlinear Control Techniques Employed on a Flexible, Aircraft-Inspired Model." 2011 SIAM Conference on Control and Its Applications. Baltimore, MD. July 26, 2011.

A. Chakravarthy, K. Evans, J. Evers, **L. Kuhn**. "Target Tracking Strategies for a Nonlinear, Flexible Aircraft-Inspired Model," 2011 American Control Conference. San Francisco, CA. June 30, 2011.

PRESENTATIONS

L. Kuhn. "Step Up to the Plate," Southeastern Department of Mathematics September Undergraduate Mathematics Colloquium, September 17, 2019, Hammond, LA.

L. Kuhn, S. Russell, M. Boudreaux, J. Gaboury, and B. Maulding. "Development of a Rapid First-Order Differential Equation Solver for Stiff Systems," 17th International Conference on Scientific Computing, July 30, 2019, Las Vegas, NV.

L. Kuhn. "Modeling and Control of Biologically-Inspired Air Vehicles," College of Science and Technology Seminar, November 14, 2013, Hammond, LA.

L. Kuhn. "Jump-Starting Your Career in Math," Southeastern Undergraduate Mathematics Society meeting, September 24, 2013, Hammond, LA.

A. Chakravarthy, K. Evans, J. Evers, **L. Kuhn**. "Target Tracking Strategies for a Nonlinear, Flexible Aircraft-Inspired Model," Scientific Computing Around Louisiana (SCALA) 2011. New Orleans, LA. January 29, 2011.

A. Chakravarthy, K. Evans, J. Evers, **L. Kuhn**. "Target Tracking Strategies for a Nonlinear Aircraft Model," AMS/MAA Joint Mathematics Meetings Special Session for Control and Inverse Problems in Partial Differential Equations II. New Orleans, LA. January 9, 2011.

A. Chakravarthy, K. Evans, J. Evers, **L. Kuhn**. "Modeling and Control of Flexible Wing Micro Air Vehicles," University of Florida Research and Engineering Education Facility Summer Seminar Series. Fort Walton Beach, FL. August 10, 2010.

L. Kuhn, J. Elliott, K. Bearden, D. Mainardi, D. Mills. "Louisiana Tech's Creating Connections NSF GK12 Program: 'Mechanisms for Introducing Research into the K-12 Classroom.'" National Science Foundation Graduate STEM Fellows in K-12 Education (GK-12) Annual Meeting Special Session. Washington, DC. March 28, 2010.

J. Elliott, **L. Kuhn**, K. Bearden, D. Mainardi, D. Mills. "Louisiana Tech's NSF GK-12 Program: 'Creating Connections:' Integrating Education and Research. Poster presented at the National Science Foundation Graduate STEM Fellows in K-12 Education (GK-12) Annual Meeting. Washington, DC. March 27, 2010.

L. Kuhn, J. Elliott, K. Bearden, D. Mainardi, D. Mills. "Louisiana Tech's NSF GK-12 Program: Research Related Lessons Integrated Into Curriculum Through Focus on Methodology and Application." Poster presented at the National Science Foundation Graduate STEM Fellows in K-12 (GK-12) Annual Meeting. Washington, DC. March 27, 2010.

L. Kuhn and K. Evans. "Modeling and Control Strategies for Flexible Wing Micro Air Vehicles." Poster presented at the National Science Foundation. Arlington, VA. March 26, 2010.

K. Evans and **L. Kuhn**. "Control Design Strategies for an Aircraft-Inspired Partial Differential Equation Model," Louisiana/Mississippi Section of the Mathematical Association of America. Hammond, LA. March 5, 2010.

L. Kuhn, J. Elliott, D. Mills, and D. Mainardi. "Disseminating Graduate STEM Research in the K-12 Classroom." NSF Southwest Regional GK-12 Meeting, Fort Worth, TX, November 14, 2010

J. Elliott, **L. Kuhn**, D. Mills, and D. Mainardi. "Louisiana Tech University's GK-12 'Creating Connections' Program: Bringing Research into the K-12 Classroom." Poster presented at the NSF Southwest Regional GK12 Meeting**,** Fort Worth, TX, November 14, 2009.

EXTERNAL FUNDING

2013   (Co-PI) *Modeling and Simulation Using a Small-Scale Beowulf Cluster,* Pilot
                 Funding for New Research, LA EPSCoR Program, 01/01/13 – 12/31/13, $10,000 (PI:
                 J. Burris).

INTERNAL FUNDING

2019   *Visualizing Math: Presentation Equipment for Student Learning and Undergraduate
                 Research,* Southeastern Louisiana University Student Tech Fee Small Project
                 Proposal, $2,207.10 (with R. Devun).
2017   *Computational Resources for Student Projects,* Southeastern Louisiana University
                 Student Tech Fee Small Project Proposal, $4,969.96.
2014   *MATLAB for Mathematics Courses and Student Research,* Southeastern Louisiana
                 University Student Tech Fee Small Project Proposal, $2,822 (with D. Merino).
2014   *Wheeled and Fixed Wing Unmanned Autonomous Vehicles with Multimodal Sensors
                 for Engineering Technology and Research,* Southeastern Louisiana University
                 Student Tech Fee Small Project Proposal, $5,000 (with S. Russell).
2013   *Supplementing a Small-Scale MATLAB Cluster for Collaborative Research and HPC
                 Education/Demonstration*, Southeastern Louisiana University Student Tech Fee Small
                 Project Proposal, $5,000 (with J. Burris).

AWARDS AND HONORS

2013	Southeastern Louisiana University Office of Sponsored Research and Programs First Time Grant Awardee.
2011	Best Paper Presentation in Session, 2011 American Control Conference, San Francisco, CA, June 30, 2011.
2011	SIAM Conference on Control and Its Applications Student Travel Grant.
2010	AMS/MAA Joint Mathematics Meetings Travel Grant.
2010	NSF ADVANCE "Negotiating the Ideal Faculty Position" Travel Grant.
2009-2010	NSF GK-12 Teaching Fellow.

PROFESSIONAL DEVELOPMENT

8/25/17	Office of Sponsored Research and Programs, "Louisiana Board of Regents Programs and Process Webinar," Hammond, LA.
2/23/17	Center for Faculty Excellence Google Drive Workshop, Hammond, LA.
2/11/15	Center for Faculty Excellence Lunch N Learn, "Lunch N Learn to Publish in the Technical Journals," Hammond, LA.
9/18/13	Center for Faculty Excellence Lunch N Learn, "Searching for Gold and Finding the Green: Resources and Services for Grants," Hammond, LA.
3/1/13	Mathematical Association of America LA/MS Section Meeting. Hattiesburg, MS.
11/28/12	NSF Day, Jackson State University, Jackson, MS.
6/20/12 – 6/22/12	*WeBWorK* Conference , Clinton, MS by Dr. John Travis
2009-2010	*LA Tech's OWISE Professional Development for Grad Students* by Dr. Jenna Carpenter
2009-2010	*Professional Development for Teaching Fellows* by Dr. David Mills

ORGANIZATIONS AND SERVICE

2013, 2018 – present	Member, Society of Industrial and Applied Mathematics
2012 – present	Faculty Co-Adviser for Southeastern Louisiana University Women in Technology.
2015	Traveled with three SLU students to attend the NSF Graduate Research Fellowship Program Workshop at Louisiana Tech University, Ruston, LA on 8/28/15 – 8/29/15.
2015	Referee for the IEEE Transactions on Control Systems Technology (one paper).
2014	Referee for the IEEE Transactions on Control Systems Technology (one paper).
2014	Referee for the International Journal on Artificial Intelligence Tools (one paper).
2013	Referee for the International Journal on Artificial Intelligence Tools (two papers).
2013	Referee for the Student Paper Committee for the Louisiana/Mississippi Section of the Mathematical Association of America (seven undergraduate papers and presentations, one graduate paper and presentation).
2012	Referee for the International Journal on Artificial Intelligence Tools (one paper)

2011	Referee for the 2012 American Control Conference (one paper and one session proposal)
2010	Volunteer – Louisiana Tech University NSF Day
2007 – 2011	Member - American Mathematical Society
2008 – 2010	Louisiana Tech University College of Engineering and Science Graduate Student Council

PROGRAMMING LANGUAGES

Java, Matlab, LaTeX, R, C, Fortran, Python

REFERENCES

Timothy Hudson
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Katie A. Evans
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