

Cody E. Clifton

CONTACT INFORMATION

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RESEARCH INTERESTS

Stochastic systems, parameter estimation and adaptive control, PageRank algorithm.

EDUCATION

The University of Kansas (KU), Lawrence, Kansas, USA

Ph.D., Mathematics, with Honors, May 2015

Dissertation: *A Stochastic System Model for PageRank: Parameter Estimation and Adaptive Control*

Advisor: Bozenna Pasik-Duncan

M.A., Mathematics, with Honors, May 2013

Thesis: *Numerical Methods for Parameter Estimation in Stochastic Systems*

Whitman College, Walla Walla, Washington, USA

B.A., Mathematics, *magna cum laude*, May 2010

Senior Thesis: *Commutativity in non-Abelian Groups*

Clackamas Community College (CCC), Oregon City, Oregon, USA

A.A.O.T., two-year Oregon transfer degree, June 2008

HONORS & AWARDS

- *Graduate Research Assistantship* (supported by NSF grants DMS-0808138 and DMS-1108884, AFOSR grant FA9550-12-1-0384, and ARO grant W911NF-10-1-0248) **May 2012 - May 2015**
- *John Bunce Memorial Award* (KU Math Dept.) **April 2015**
- *Florence Black Award for Excellence in Teaching* (KU Math Dept.) **April 2014**
- *Graduate Research Summer Assistantship* (KU Math Dept.) **2012, 2013, 2014**
- *Joan Kirkham Travel Scholarship* (KU Math Dept.) **2012-'13, 2013-'14**
- *Outstanding Graduate Teaching Assistant Award* (KU) **April 2013**
- *Phi Beta Kappa* Honor Society (Whitman College chapter) **May 2010**
- *Senior of Outstanding Service and Recognition* (Whitman College) **May 2010**
- *Phi Theta Kappa* Honor Society (CCC chapter) **November 2007**

ACADEMIC EXPERIENCE

KU Department of Mathematics, Lawrence, Kansas, USA

- *Graduate Research Assistant* **May 2012 - May 2015**
Proposed a stochastic system model for PageRank, investigated parameter estimation and adaptive control techniques applied to this model, and developed MATLAB code for numerical simulations.
- *AMS GSC Founder & President* **September 2013 - May 2014**
Founded and served as President of the University of Kansas Graduate Student Chapter of the American Mathematical Society, which merged with the existing KU Mathematics Graduate Student Organization.

• ***Graduate Student Organization Officer*** **May 2012 - May 2014**

Served as President (May 2013 - May 2014) and Vice President (May 2012 - May 2013) of the KU Mathematics Graduate Student Organization, which represents and advocates for graduate students in mathematics at the University of Kansas. Developed and organized a mathematics seminar for first-year math graduate students and an annual welcome picnic for all new and returning math graduate students.

• ***Graduate Teaching Assistant*** **August 2010 - May 2014**

Instructor:

- Math 122: Engineering Calculus II (Spring 2014)
- Math 121: Engineering Calculus I (Fall 2012, Fall 2013)
- Math 115: Business Calculus I (Spring 2012)
- Math 104: Trigonometry and Precalculus (Fall 2011)
- Math 002: Elementary Algebra (Fall 2010, Spring 2011)

Assistant coordinator:

- Math 121: Engineering Calculus I (Fall 2013, large lecture section of 500 students)

Substitute lecturer:

- Math 526: Applied Mathematical Statistics (Fall 2012)
- Math 243: Honors Vector Calculus (Fall 2012)

• ***Mathematics Tutor*** **October 2012 - December 2012**

Tutored University of Kansas students in calculus.

• ***Summer Director: Kansas Algebra Program*** **May 2011 - August 2011**

Organized and oversaw all summer operations of the Kansas Algebra Program. Specific duties included coordinating three sections of Math 002: Elementary Algebra and five sections of Math 101: College Algebra, supervising and evaluating their respective undergraduate teaching assistants, preparing all course materials (including syllabi and exams) for over 100 students, and implementing the MyMathLab online courseware system for homework and quizzes.

Whitman College Department of Mathematics, Walla Walla, Washington, USA

• ***Mathematics Tutor*** **November 2008 - May 2010**

Tutored Whitman College students in elementary statistics and calculus courses.

CCC Department of Mathematics, Oregon City, Oregon, USA

• ***Mathematics Tutor*** **September 2007 - June 2008**

Tutored community college students in mathematics courses ranging from elementary algebra to calculus, linear algebra, and differential equations.

EDUCATIONAL
OUTREACH

Mathematics Awareness Month Volunteer

April 2012 - April 2015

Lawrence, Kansas, USA.

- Organized and assisted with competitions and activities for K-12 students to raise mathematics awareness in accordance with the theme of:
 - Math Drives Careers (2015)
 - Mathematics, Magic, and Mystery (2014)
 - The Mathematics of Sustainability (2013)
 - Mathematics, Statistics, and the Data Deluge (2012)

Guest Speaker**February 12, 2013**

Bishop Seabury Academy, Lawrence, Kansas, USA

- Presented a talk on “Mathematics: a Global Science” to 6th and 7th grade students.

PUBLICATIONS

- 2015** – **C. E. Clifton** and B. Pasik-Duncan. *Adaptive Control of a Stochastic System Model for PageRank*. In preparation
- 2015** – **C. E. Clifton**. *A Stochastic System Model for PageRank: Parameter Estimation and Adaptive Control*. Ph.D. dissertation, ProQuest Dissertation Publishing, Jul 2015.
- 2015** – **C. E. Clifton** and B. Pasik-Duncan. *Parameter Estimation in a Stochastic System Model for PageRank*. Proc. SIAM Conf. Control & Appl. (CT15), Paris, France, Jul 2015 (peer-reviewed)
- 2015** – **C. E. Clifton**. *The Math Behind Google PageRank*. Third place winning flyer, SIAM Math Matters, Apply It! contest, Feb 2015
- 2013** – **C. E. Clifton**. *Numerical Methods for Parameter Estimation in Stochastic Systems*. M.A. thesis, ProQuest Dissertation Publishing, Aug 2013
- 2011** – **C. E. Clifton**, D. Guichard and P. Keef. *How Commutative Are Direct Products of Dihedral Groups?* Mathematics Magazine, 84(2):137-140, Apr 2011 (peer-reviewed)

PRESENTATIONS

- 2015** – *Parameter Estimation in a Stochastic System Model for PageRank* (with B. Pasik-Duncan). Invited talk at the SIAM Conference on Control and Its Applications (CT15), Minisymposium on Stochastic Systems and Applications, Paris, France, Jul 9
- 2015** – *Identification in a Stochastic PageRank Model* (with B. Pasik-Duncan). Invited talk at the 27th IFIP TC7 Conference on System Modelling and Optimization, Minisymposium on Inversion, Estimation and Control of Uncertain Distributed Dynamical Systems, SophiaTech Campus, Sophia Antipolis, France, Jun 30
- 2015** – *A Stochastic System Model for PageRank: Parameter Estimation and Adaptive Control*. Final Oral Examination for the Ph.D. degree, KU, Lawrence, Kansas, USA, Apr 20
- 2014** – *PageRank and System Identification*. Comprehensive Oral Examination for the Ph.D. degree, KU, Lawrence, Kansas, USA, Nov 19
- 2013** – *Numerical Methods for Parameter Estimation in Stochastic Systems*. M.A. thesis defense, KU, Lawrence, Kansas, USA, Apr 16
- 2010** – *How Commutative is a non-Abelian Group?* Pi and Ice Cream lecture series, CCC, Oregon City, Oregon, USA, May 24

CONFERENCES
ATTENDED

- 2015** – SIAM Conference on Control and Its Applications (CT15), Paris, France, Jul 8 - 10
- 2015** – 27th IFIP TC7 Conference on System Modelling and Optimization, Sophia Antipolis, France, Jun 29 - July 3
- 2015** – Midwest Mathematics and Climate Conference, Lawrence, KS, April 30 - May 2
- 2014** – American Control Conference, Portland, OR, USA, June 4 - 6
- 2014** – KU Computational and Applied Math Workshop, Lawrence, KS, USA, April 18 - 19
- 2013** – American Control Conference, Washington, D.C., USA, June 17 - 19
- 2013** – First Central Region Conference on Numerical Analysis and Dynamical Systems, KU, Lawrence, KS, USA, May 3 - 5
- 2012** – 51st IEEE Conference on Decision and Control, Maui, HI, USA, December 10 - 13
- 2012** – AMS Central Section Meeting, Lawrence, KS, USA, March 30 - April 1
- 2009** – MAA MathFest, Portland, OR, USA, August 6 - 8

WORKSHOPS &
SPECIAL SESSIONS

- 2015** – Assistant for “The Power, Beauty and Excitement of the Cross-Boundaries Nature of Control, a Field that Spans Science, Technology, Engineering and Mathematics (STEM)” workshop for high school students and teachers, held in conjunction with the 2015 American Control Conference, Chicago, IL, USA, July 1
- 2015** – Coordinator of the “Students + Workshops = Success + Fun” workshops for 5th grade students from the Broken Arrow Elementary School (April 15) and Cordley Elementary School (April 22), held in conjunction with Mathematics Awareness Month, Lawrence, KS, USA
- 2015** – Participant in the First KU Tech Trek, Silicon Valley, CA, USA, January 13 - 15
- 2014** – Assistant for “The Power, Beauty and Excitement of the Cross-Boundaries Nature of Control, a Field that Spans Science, Technology, Engineering and Mathematics (STEM)” workshop for high school students and teachers, held in conjunction with the 53rd IEEE Conference on Decision and Control, Los Angeles, CA, USA, December 15
- 2014** – Assistant for “The Beauty of Feedback Control” workshop for high school students and teachers, held in conjunction with the 19th World Congress of IFAC, Cape Town, South Africa, August 29
- 2014** – Assistant for “The Beauty of Controls” workshop for middle and high school students and teachers, held in conjunction with the 2014 American Control Conference, Portland, OR, USA, June 3
- 2014** – Coordinator of the “Students + Workshops = Success + Fun” workshops for 5th grade students from the Auburn Washburn Math Focus Group (April 8), Broken Arrow Elementary School (April 9), and Hillcrest Elementary School (April 23), held in conjunction with Mathematics Awareness Month, Lawrence, KS, USA
- 2014** – Participant in the Special Workshop on “Careers and Opportunities in Industry for Mathematical Scientists,” held at the Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, MN, USA, April 7 - 9
- 2013** – Assistant for the special session on “The History of Workshops for High School Students and Teachers: The Ideas and Technology of Control Systems,” held in conjunction with the 2013 American Control Conference, Washington, D.C., USA, June 19
- 2013** – Assistant for the special session on “The History of Women in Control,” held in conjunction with the 2013 American Control Conference, Washington, D.C., USA, June 18
- 2013** – Assistant for “The Beauty of Controls” workshop for middle and high school students and teachers, held in conjunction with the 2013 American Control Conference, Washington, D.C., USA, June 17
- 2013** – Coordinator of the “Students + Workshops = Success + Fun” workshops for 5th grade students from Schwegler Elementary School (April 10) and the Auburn Washburn Math Focus Group (April 16), held in conjunction with Mathematics Awareness Month, Lawrence, KS, USA
- 2012** – Assistant for “The Ideas and Technology of Control Systems: The Power and Beauty of a Field that Spans Science, Technology, Engineering and Mathematics (STEM)” workshop for middle and high school students and teachers, held in conjunction with the 51st IEEE Conference on Decision and Control, Maui, HI, USA, December 12
- 2012** – Organizer of the “Let’s Sample!” activity, held in conjunction with Mathematics Awareness Month as part of the “Students + Workshops = Success + Fun” workshops for 5th grade students from Hillcrest Elementary School (April 11) and Quail Run Elementary School (April 18), Lawrence, KS, USA

PROFESSIONAL SERVICE	<p>Webmaster May 2012 - July 2015</p> <p>Maintained professional websites for:</p> <ul style="list-style-type: none"> – IEEE CSS Technical Committee on Control Education (May 2012 - July 2015) – AACC Technical Committee on Education (May 2012 - July 2015) – Professor Bozenna Pasik-Duncan, KU (May 2012 - July 2015) – AWM University of Kansas Student Chapter (November 2012 - May 2015) <p>Paper Reviewer May 2012 - Dec 2014</p> <p>Reviewed papers for:</p> <ul style="list-style-type: none"> – 2013 Advances in Control Education (ACE 2013) Conference – <i>Journal of Communications and Information Systems (JCIS)</i> – <i>Challenges of Modern Technology</i> journal – 51st IEEE Conference on Decision and Control (CDC 2012)
PROFESSIONAL MEMBERSHIPS	<ul style="list-style-type: none"> • IFAC Technical Committee 9.4 on Control Education 2014 - present • Society for Industrial and Applied Mathematics (SIAM) 2013 - present • SIAM Activity Group on Control and Systems Theory (SIAG/CST) 2013 - present • Institute of Electrical and Electronics Engineers (IEEE) 2012 - present • IEEE Control Systems Society (IEEE CSS) 2012 - present • IEEE CSS Technical Committee on Control Education 2012 - present • American Automatic Control Council Technical Committee on Education 2012 - present • American Mathematical Society (AMS) 2010 - present • The University of Kansas Graduate Student Chapter of the AMS 2013 - 2015 • Association for Women in Mathematics (AWM) 2012 - 2015
TECHNICAL SKILLS	<ul style="list-style-type: none"> • <i>Software:</i> MATLAB, Maple, Mathematica, Adobe Dreamweaver • <i>Programming:</i> Python, Sage, C++, L^AT_EX (incl. Beamer class), XML, HTML & CSS