

# Eddie Tu

## Curriculum Vitae

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**PROFESSIONAL EXPERIENCE** Assistant Professor of Mathematics and Data Analytics *August 2017 - Present*  
Dickinson College, Carlisle, PA

**EDUCATION** Ph.D Mathematics, August 2017, University of Tennessee, Knoxville  
*Advisor:* Dr. Jan Rosinski

M.S. Statistics, August 2017, University of Tennessee, Knoxville

M.S. Mathematics, December 2014, University of Tennessee, Knoxville

B.S. Mathematics, Minor in English Literature, May 2011, Randolph-Macon College, Ashland, VA

**RESEARCH INTERESTS** Markov Processes, Lévy Processes, Stochastic Modeling, Machine Learning, Bayesian Modeling, Data Analytics for Community Science, Data Analytics for Process Data

### PROGRAMMING SKILLS

Python - programming, statistical analysis, machine learning, dashboard development  
R - programming, statistical analysis, machine learning  
MATLAB - programming, optimization, statistical analysis, stochastic modeling  
SQL - basics, PostgreSQL  
Mathematica - multivariable calculus teaching tool  
LaTeX - articles, posters, beamer presentations  
HTML - web development  
CSS - web development  
JavaScript - basics

**PUBLICATIONS** **Tu, E.**, Boback, S., Taylor, E., Kong, B. Harnessing the power of citizen science to study a secretive species: challenges, solutions, and best practices. *Manuscript in progress.*

**Tu, E.** & Wickard, T. PCA and related methods for anomaly detection in high-frequency sensor networks in manufacturing. *Manuscript in progress.*

Rosinski, J. & **Tu, E.**. Improved small-time asymptotics, with applications to association of Lévy processes. *Manuscript in progress.*

**Tu, E.**. (2021). Association and other forms of positive dependence for Feller evolution systems. *Theory of Probability and Its Applications*, 66(2), 299-317.  
<https://doi.org/10.1137/S0040585X97T99040X>

**Tu, E.** (2019). On association and other forms of positive dependence for Feller processes. *Journal of Applied Probability*, 56(2), 624-646. doi:10.1017/jpr.2019.36.

Lambert, K., Franssen, C., Bardi, M., Hampton, J., Hainley, L., Karsner, S., **Tu, E.**, Hyer, M., Crockett, A., Baranova, A., & Ferguson, T. Characteristic and distinct neurobiological patterns differentiate paternal responsiveness in two *Peromyscus* species. *Journal of Neuroscience*, 2011.

## CONSULTING WORK

### Carlisle Construction Materials (CCM)

*Consultant*

*Summer 2020 - Summer 2021*

Carried out analysis on process data at manufacturing plant.

Built machine learning models for detecting anomalies.

Wrote programs in Python and JavaScript for implementation.

## TALKS

Boback, S., **Tu, E.**, Taylor, E. (2022). Project RattleCam: What have we learned so far from spying on rattlesnakes? Presentation at 2022 Biology of the Pitvipers 4 in Rodeo, NM.

**Tu, E.** (2019). Association and other forms of positive dependence for Feller evolution systems. Presentation at the 2019 Joint Mathematics Meeting in Baltimore, MD.

**Tu, E.** (2018). Grad School: An Exciting and Challenging Journey. Presentation at Randolph-Macon College, Ashland, VA.

**Tu, E.** (2017). On the association of certain Feller processes. Presentation at the 2017 Joint Mathematics Meeting in Atlanta, GA.

**Tu, E.**, & Wastvedt, B. (2011). Applications of and Alternatives to Algorithm X for the Exact Cover Problem. Presentation at the 2011 Joint Mathematics Meeting in New Orleans, LA.

**Tu, E.**, & Wastvedt, B. (2010). Applications of and Alternatives to Algorithm X for the Exact Cover Problem. Presented poster at the 2010 Young Mathematicians Conference at The Ohio State University, Columbus, OH.

## SERVICE TO THE COLLEGE

### Dickinson's Data Science Initiative (DSI)

*Active Contributor*

*Spring 2019 - Spring 2021*

Met weekly with members of DSI as part of the Revolutionary Challenge.

Contributed to work on APSC proposal. Member of search committee for VAPs.

### eSports Club

*Faculty Advisor*

*Spring 2020 - present*

### MANDatory

*Participant and Speaker*

*Fall 2018, Fall 2019*

Joined discussion groups with student members of MANDatory.

## SERVICE TO MATHEMATICS COMMUNITY

### Journal of Applied Probability

Refereed paper in Journal of Applied Probability in February 2020.

### Joint Mathematics Meeting

Chaired the AMS Contributed Paper Session of Probability Theory and Stochastic Processes at the 2019 Joint Mathematics Meeting.

## ADDITIONAL RESEARCH EXPERIENCE

**Upward Bound Math and Science Center, University of Tennessee, Knoxville**  
*Graduate Research Mentor* *Summer 2013*

Mentored five high school seniors and juniors in a Mathematics research project. Created activities to foster group work and individual critical thinking. Worked on an extension of “The Locker Problem,” which involves notions of modular arithmetic. Assisted students in writing paper and giving presentation.

**Research Experiences for Undergraduates (REU), James Madison University, Harrisonburg, VA**

*Undergraduate Researcher* *Summer 2010*  
*Advisor: Dr. Stephen Lucas*

We investigated methods to convert certain NP-complete problems to the Exact Cover problem, more specifically, the Vertex Coloring Problem and the Hamiltonian Cycle Problem. Finally, we showed an alternative to Algorithm X for solving Exact Cover, reducing the size the Exact Cover problem.

## AWARDS & GRANTS

**PIC Math**

*\$5000 grant from Mathematical Association of America* *2021*  
*Funds and supports an applied math course coupled with an industry partner*  
*Funds travel costs to MAA’s MathFest 2022*

**Yueh-Er, Hong-Hsu, & Clarence Cheng Kuo Fellowship Endowment**

*Award for Outstanding Masters student in Mathematics* *May 2014*  
University of Tennessee, Knoxville

**Dorothea & Edgar D. Eaves Teaching Award (Finalist)**

University of Tennessee, Knoxville *May 2013*

**The Smithey Mathematics Medal**

*Award for Outstanding Senior in Mathematics* *May 2011*  
Randolph-Macon College

**Moore-Peace Prize**

*Award for Outstanding Junior in Mathematics* *May 2010*  
Randolph-Macon College

## TEACHING EXPERIENCE

**Dickinson College**

<i>PIC (Preparation for Industrial Careers) Math</i>	<i>Spring 2022</i>
<i>First Year Seminar: “Rise of the Machines”</i>	<i>Fall 2021</i>
<i>Probability and Statistics II</i>	<i>Spring 2021</i>
<i>Independent Study (Machine Learning)</i>	<i>Fall 2019</i>
<i>Discrete Mathematics</i>	<i>Fall 2019, Spring 2022</i>
<i>Integration and Infinite Series</i>	<i>Spring 2019</i>
<i>Probability and Statistics I</i>	<i>Fall 2018</i>
<i>Single-variable Calculus</i>	<i>Spring 2018, Fall 2018, Spring 2020</i>
<i>•</i>	<i>Fall 2020, Fall 2021</i>
<i>Multivariable Calculus</i>	<i>Fall 2017, Spring 2019, Spring 2020</i>
<i>•</i>	<i>Fall 2020, Spring 2021, Fall 2021</i>

## University of Tennessee, Knoxville

<i>Calculus I</i>	<i>Fall 2016</i>
<i>Calculus III</i>	<i>Fall 2015, Spring 2016</i>
Flipped Classroom with heavy use of Mathematica	
<i>Finite Mathematics</i>	<i>Spring 2014, Spring 2015</i>
<i>Pre-Calculus</i>	<i>Fall 2014</i>
Part of RISER program for first-year engineers	
<i>Basic Calculus</i>	<i>Fall 2014</i>
<i>Introduction to Statistics</i>	<i>Summer 2012, Fall 2012, Spring 2013, Fall 2013</i>
<i>College Algebra</i>	<i>Fall 2011, Spring 2012</i>

**CONFERENCES** *PIC Math Faculty Workshop*, June 7 - 10, 2021, Zoom.

### AND

**WORKSHOPS** *Ethics Across the Curriculum Faculty Study Group*, May 26 - 28, 2021, Dickinson College, Carlisle, PA.

*MathFest*, July 31 - August 3, 2019, Cincinnati, OH.

*International Conference on Machine Learning*, June 9 - 15, 2019, Long Beach, CA.

*Joint Mathematics Meetings*, January 16 - 19, 2019, Baltimore, MD.

*MathFest*, August 1 - 4, 2018, Denver, CO.

*Joint Mathematics Meetings*, January 10 - 13, 2018, San Diego, CA.

*John H. Barrett Memorial Lectures*, May 1 - 3, 2017, University of Tennessee, Knoxville.

*Joint Mathematics Meetings*, January 4 - 7, 2017, Atlanta, GA.

*Workshop on Dependence, Stability, and Extremes*, May 2 - 6, 2016, Fields Institute, Toronto, Ontario, Canada.

*CRM-PIMS Summer School in Probability*, June 15 - July 11, 2015, McGill University, Montreal, Quebec, Canada.

*American Mathematical Society Southeastern Spring Sectional Meeting*, March 21 - 23, 2014, University of Tennessee, Knoxville.

*Joint Mathematics Meetings*, January 6 - 9, 2011, New Orleans, LA.

*Young Mathematicians Conference*, August 27 - 29, 2010, Ohio State University.