

# Sudam Surasinghe

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## OBJECTIVE

Committed lecturer and Mathematician with varied applied mathematical research interests and a passion for constructive and effective teaching methods to promote a stimulating learning environment. My research interests are focused on deepening our understanding of data-driven analysis methods for dynamical systems. I would like to see both mathematical and statistical view of data science. During my PhD career, I developed geometric measures to identify the causality by time series data. I also investigated the random projection methods and Koopman operator theory to identify the global dynamics of non-linear dynamical systems. I am currently seeking a job in academia.

## RESEARCH INTERESTS

Data driven analysis methods for complex systems and dynamical systems.  
Machine learning and data science.  
Information Theory, Causation inference.  
Stochastic processes, Financial Mathematics, Optimization.  
Applications: engineering, economics and finance, oceanography and Earth science, medicine, aeronautical Aeronautical science, image processing, bioinformatics, neuroscience, social and behavioral science.

## EDUCATION

**Clarkson University**, Potsdam, NY, USA.

PhD, Mathematics, *expected* May 2022 (Advisor: Erik M Bollt)

Dissertation: "Learning features of Dynamical Systems by Data Driven Analysis Methods"

**University of North Florida**, Jacksonville FL, USA.

M.S., Applied Mathematics, April 2016

**University of Colombo**, Colombo, Sri Lanka.

M.S., Financial Mathematics, March 2013

B.S., Mathematics, May 2009

- Special degree in Mathematics : Major in Mathematics & Minor in statistics and computer science.

**University of Colombo School of Computing**, Colombo, Sri Lanka.

Advance Certificate, IT, May 2007

- Complete a 3 year advance certificate degree in information technology.

## CAREER HISTORY

**Graduate Teaching Assistant** July 2016 to present  
Department of Mathematics, Clarkson University

**Graduate Teaching Assistant** August 2014 to June 2016  
Department of Mathematics and Statistics, University of North Florida

<b>Instructor</b> University of Colombo, Sri Lanka	2012-2014
<b>Visiting Lecturer</b> Uva Wellassa University, Sri Lanka	2012
<b>Assistant Lecture/Instructor</b> Department of Mathematics, University of Colombo, Sri Lanka	2009-2012

REFEREED  
JOURNAL  
PUBLICATIONS

1. **Sudam Surasinghe**, and Erik Bollt, “On Geometry of Information Flow for Causal Inference” *Entropy*, 2020, Volume 22, Issue 4:396 (Cover Article).  
<https://doi.org/10.3390/e22040396>
2. **Sudam Surasinghe**, and Erik Bollt, “Randomized Projection Learning Method for Dynamic Mode Decomposition” *Mathematics*, 2021, Volume 9, Issue 2803.  
<https://doi.org/10.3390/math9212803>

IN PROGRESS

1. **Sudam Surasinghe**, and Erik Bollt, “Randomized Kernel methods for Dynamic Mode decomposition.” pp 1-10.
2. **Sudam Surasinghe**, Jeremie Fish, and Erik Bollt, “Learning Transfer Operators by Kernel Density Estimation.” pp 1-12 .
3. **Sudam Surasinghe**, and Erik Bollt, “Data Driven Fractal Geometric Approach to Causal Inference.” pp 1-7 .
4. **Sudam Surasinghe**, Sathsara Dias, Kanaththa Priyankara, Marko Budišić, Erik Bollt, Larry Pratt, and Jose Sanchez-Garrido, “Dynamical Mode Analysis of Tidal Flows through the Strait of Gibraltar.” pp 1- 25.

PRESENTATIONS

1. **Sudam Surasinghe**, and Erik Bollt, “Learning a Reduced Order Dynamic Mode Decomposition by Random Observable Features” *SIAM Conference on Applications of Dynamical Systems(DS21)*, May 2021.
2. **Sudam Surasinghe**, Sathsara Dias, Kanaththa Priyankara, Marko Budišić, Erik Bollt, Larry Pratt, and Jose Sanchez-Garrido, “Dynamic Mode Decomposition Uncovers Hidden Oceanographic Features Around the Strait of Gibraltar” *73rd Annual Meeting of the APS Division of Fluid Dynamics: Session H10*, Nov 2020.
3. **Sudam Surasinghe** , Kanaththa Priyankara, Sathsara Dias, Marko Budišić and Erik Bollt, “Dynamical mode analysis of tidal flows through the Strait of Gibraltar” *Dynamic Days*, Jan 2020.
4. **Sudam Surasinghe** , Eric Takyi, and Michael Regan, “Lessons Learned from the Inaugural SIGTA Education Program” *David A. Walsh ‘67 Arts and Sciences Mini Conference*, March 2017. (Moving the Needle: Clarkson Graduate TA Panel. This is a panel discussion/Q&A session about teaching strategies which can be incorporate into the STEM undergraduate classes. )
5. **Sudam Surasinghe**, “Applications of Self-Assembly Graphs” *Annual Joint Meeting of Florida Mathematical Association of America and American Mathematical Association of Two Year Colleges*, 2015.

6. Katie Bakewell, Daniela Genova and **Sudam Surasinghe**, “Self-Assembly of DNA Graphs and Weighting Algorithms” *46th Annual Southeastern International Conference on Combinatorics, Graph Theory, and Computing*, 2015.
7. Katie Bakewell, Daniela Genova and **Surasinghe, Sudam** “Self-Assembly of DNA Graphs and Postman Tours” *21st International Conference on DNA Computing and Molecular Programming*, 2015.
8. **Surasinghe N.W.V.S.C**, and Perera S.S.N., “Evaluation of Service Quality: Mathematical Modelling Approach” *13th Annual Research Symposium, University of Kelaniya* , 145-146,2012.
9. Wijerathna JK, Perera S.S.N. and **Surasinghe N.W.V.S.C**, “Economic Recession Forecasting Using Neural Network” *SLAAS Proceeding of the 66th Annual Sessions, Part1- abstracts*, 88, 2010.

TEACHING  
EXPERIENCE

**Instructor-of-record**

Clarkson University, USA

MA041 Co-Calculus I

MA042 Co-Calculus II

MA200 Mathematical Modelling & Software (Co-instructor for this course)

University of Colombo, Sri Lanka

MS 1004 Computing for Finance

FM 2001 Computational Financial Mathematics I

FM 2005 Computational Financial Mathematics II

AM3006 Financial Mathematics

AM4005 Theory of interest and corporate finance

FND1206 Intermediate Mathematics (Similar to College algebra)

FND1207 Basic Mathematics(Similar to Pre-Calculus)

FND2101 Elementary Statistics

Uva Wellassa University, Sri Lanka

EMG335 Actuarial Science

EMG337 IT for Actuarial Science

**Recitation Instructor**

Clarkson University, USA

MA131 Calculus I

MA132 Calculus II

University of North Florida, USA

MAC1105 College Algebra

MAC2233 Calculus for Business

SAT2023 Elementary Statistics

University of Colombo, Sri Lanka

AM1001 Differential Equation I

AM2001 Differential Equation II

MS2002 Quantitative Methods

FM2004 Mathematical Methods for Finance

**Additional Experience Related To Teaching**

- Participate to the 7 credit hour **Graduate Teaching Assistant Boot camp** conducted by the department of Education, Clarkson University, USA.
- Create and conduct a workshop “Mathematics learning skills” for undergraduate student in Clarkson University, USA.

- AWARDS
- Sanda Briggs Outstanding Teaching Assistant Award for Mathematics. Awarded by the department of Mathematics, Clarkson University. 2020
  - Outstanding Graduate Student in Mathematics. Awarded by the department of Mathematics and Statistics, University of North Florida. 2016
  - SIAM Student Travel Award. Awarded by the Society for Industrial and Applied Mathematics, USA. 2021

- SERVICE
- Secretary, SLAAS, Division of Physics, Mathematics, Statistics and Computer Science 2012-2013
    - Sri Lanka Association for the Advancement of Science (SLAAS) is a national association for promotion and advancement of science.
    - Organized seminars, workshops and competitions for undergraduate and high school student to build interest in the field of mathematics and mathematical sciences.
  - Organizing Committee Member of Sri Lanka Mathematical Olympiad Award Ceremony 2009
  - Committee Member of the Epsilon – Delta Society, Faculty of Science, University of Colombo 2005-2009
    - Organized various events to enjoy the beauty of Mathematics.

- REFERENCES
- Dr. Erik M Bollt  
 W. Jon Harrington Professor of Mathematics Phone:(315)268-2307  
 Clarkson University E-mail: bolltem@clarkson.edu  
 Potsdam, NY 13699-5815, USA.
- Dr. Marko Budišić,  
 Assistant professor of Mathematics Phone: (315)268-2376  
 Clarkson University E-mail: mbudisic@clarkson.edu  
 Potsdam, NY 13699-5815, USA.
- Dr. Patricia Rand,  
 Assistant professor of Education Phone: (518)631-9872  
 Clarkson University E-mail: prand@clarkson.edu  
 Schenectady, NY 12308, USA.
- Dr. Kathleen Kavanagh  
 Professor of Mathematics Phone: (315)268-2376  
 Clarkson University E-mail: kkavanag@clarkson.edu  
 Potsdam, NY 13699-5815, USA.
- Dr. Larry J. Pratt,  
 Senior Scientist Phone: (508) 289-2540  
 Woods Hole Oceanographic Institution E-mail: lpratt@whoi.edu  
 MS #21, Clark 301A, Woods Hole, MA 02543-1535, USA.