Alex Jurgens

University of California, Davis
Complexity Sciences Center

Phone: 925-207-9248
email: amjurgens@ucdavis.edu
URL: http://csc.ucdavis.edu/~ajurgens/

Current position

Graduate Student Researcher, Complexity Sciences Center

Research Interests

complex systems, information theory, stochastic dynamical systems, stochastic processes & modeling, nonlinear dynamics, chaotic systems, symbolic dynamics, natural language processing

Education

2017 M.S. in Physics, University of California, Davis

2015 B.S. in Physics, Marietta College
Summa cum laude
Capstone award

2015 B.S. in Mathematics, Marietta College
Summa cum laude

Academic Experience

2015-Present University of California, Davis
Graduate Student Researcher
Developed methods of finding the entropy rate of non-unfilar hidden Markov models. Studied the fractal dimension of the attractor of hidden Markov models in development of the statistical complexity dimension. Investigated information anatomy of printed English text.

2015-2017 University of California, Davis
Teaching Assistant
Lead "discussion-lab" sessions for the innovative Physics 7 Series.

2016 University of California, Davis
H-bar Organizer
Organized drop-in tutoring for upper division physics courses with volunteer physics graduate students.

2014 École normale supérieure Paris-Saclay

iREU Intern

Interned at the Quantum and Molecular Photonics Laboratory (LPQM) as part of the international REU program in optics based out of the Unviversity of Michigan. Modeled and fabricated photonic crystals with two-beam interference.

2013 SLAC National Laboratory

SULI Intern

Interned at Linac Coherent Light Source (LCLS) as part of the Department of Energy SULI program. Designed and fabricated a tool to ease temporal cross-correlation of x-ray and optical laser pulses using transient changes in optical transmission of Si3N4.

Honors & Awards

2018 UC Davis Graduate Program Fellowship
2015 Phi Beta Kappa
2014 Theodore Bennett Memorial Prize in Mathematics - Marietta College
2014 Omnicron Delta Kappa
2013 Sigma Pi Sigma
2013 Kappa Mu Epsilon
2011-2015 Dean's High Honor's List - Marietta College
2011-2015 Trustee Scholarship – Marietta College

Publications & Talks

In Preparation

2018 Jurgens, A., & Crutchfield, J. (2018), "Shannon Entropy Rate and Statistical Complexity Dimension of Hidden Markov Processes".

Posters

2018 Jurgens, A. & Crutchfield, J. (2018 January) "Information Anatomy of Printed English". Poster session presented at 2018 Dynamics Days.

2015 Jurgens, A. & McKay, C. (2015 April). "Nonlinear normal modes in the double and triple pendulum". Poster session presented at the 2015 Annual Spring Meeting of the APS Ohio-Region Section, Kent, OH.

2014 Jurgens, A. & Hobson, R. (2014 August). "Modeling and fabrication of photonic crystals with two-beam interference ". Poster presented at the end of the 2014 iREU Program hosted by University of Michigan in Paris, France.

Presentations

2013 Jurgens, A. & Schlotter, B. (2013 August). "Improving ease of temporal cross-correlation of x-ray and optical laser pulses using transient changes in optical transmission of Si3N4 ". Presentation at the end of the 2013 SULI program hosted by SLAC National Laboratory in Menlo Park, CA.