Andrea Sydney

Kansas State University
Department of Electrical and Computer Engineering
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Education

Ph.D. Electrical Engineering – **Kansas State University**, Manhattan, KS — Anticipated: May 2024
Advisors: Dr. Caterina Scoglio, Dr. Don Gruenbacher
Dissertation Title: "Evaluation of Software Defined Networking for Communication and Control of Cyber Physical Systems"

M.S. Electrical Engineering – **Kansas State University**, Manhattan, KS — May 2020
Advisor: Dr. Caterina Scoglio
Thesis Title: "Characteristics of Robust Complex Networks"

B.S. Electrical Engineering – **United States Naval Academy**, Annapolis, MD — May 2018

Teaching Experience

Graduate Teaching Assistant and Research Assistant — *Aug 2020 – Present*
KSU: Electrical and Computer Engineering, Manhattan KS
Introduction to Computer Engineering

- Taught three lab sections (13 students per section), in addition to teaching class lectures in the absence of the instructor (90 students in the spring, 120 students in the fall).
- Responsibilities: Introducing new lab concepts, obtaining solutions for examinations, grading, answering students' questions, designing labs, and contributing material to the lab manual.
- Content: Digital systems and binary numbers, Boolean algebra and logic gates, gate-level minimization, combinational logic, synchronous sequential logic, registers and counters, memory and programmable logic, design at the register transfer level, and asynchronous sequential logic.
- Text: Mano, M.M. & Ciletti, M.D. (2015). Digital Design (4th Edition). Pearson Prentice Hall, in addition to a lab manual developed by Teaching Assistants.

Research Experience

Graduate Research Assistant — *Aug 2018 – Aug 2020*
KSU: Electrical and Computer Engineering, Manhattan KS

- Introduced a new metric called Elasticity to extract the characteristics of robust complex networks.
- Collaborated with systems engineers from Princeton to administer MyPLC (A private version of the PlanetLab controller) for the Great Plain's Environment for Network Innovations (GpENI) sub-aggregate of the Global Environment for Network Innovation GENI) testbed.
- Deployed the network gear necessary to create the 13th OpenFlow (a Software Defined Networking Technology that forms the backbone of the GENI testbed) campus site.
- Utilized Software Defined Networking for communication and control of cyber physical systems.

Professional Experience

Intern (Seasonal) — *May 2019 – Aug 2020*
Raytheon BBN Technologies, Cambridge, MA

- Collaborated with engineers of the Global Environment for Network Innovations Project Office (GENI Project Office or the GPO), Internet2, National LambdaRail, and University of Utah to deploy a collection of network resources including network links and compute resources.

- Collaborated with students of the University of Delaware to deploy the Leveraging and Abstracting Measurements with perfSONAR (LAMP) suite of monitoring tools.
- Presented the fully operational monitoring system to all GPO personnel.
- Evaluated the status of the system and provided feedback to the GPO on the fragility of LAMP and the future direction for monitoring within the GENI core network.
- Collaborated with constituents of various OpenFlow enabled universities including Stanford and Virginia Tech to develop and deploy a network test suite.
- Deployed a web server application to monitor traffic between campuses.
- Collaborated with network engineers and research scientists to configure, evaluate, and create documentation for the Pronto LB4G OpenFlow switch.
- Deployed a 16 screen video-wall for network monitoring.
- Evaluated the SNAC OpenFlow Policy Manager.

Intern *July 2017 – Aug 2017*
United States Naval Academy, Annapolis, MD

- Designed a microcontroller to control the elevation of a helix antenna.
- Designed a second microcontroller that synchronizes inputs from computer software with the rotation of a 5m dish which tracks and collects data from satellites that are within the horizon of Annapolis.

Computer and Network Technician *May 2010 – June 2012*
Sir Arthur Lewis Community College, St. Lucia

- Responsible for the configuration and maintenance of 400 computers.

Peer-Reviewed Publications

Journals

Published

1. A. Sydney, C. Scoglio, and D. Gruenbacher. Optimizing Algebraic Connectivity by Edge Rewiring, January 2019, Applied Mathematics and Computation, Elsevier, Vol. 219, Issue 10, pp. 5465-5479, 2020.
2. A. Sydney, J. Nutaro, C. Scoglio, and D. Gruenbacher. Simulative Comparison of Multiprotocol Label witching and OpenFlow Network Technologies for Transmission Operations, IEEE Transactions on Smart Grids, (Accepted for publication, October 2020).
3. A. Sydney, C. Scoglio, M. Youssef, and P. Schumm. Characterizing the Robustness of Complex Networks. International Journal of Internet Technology and Secured Transactions, Volume 2, pp. 291-320, 2019 (10 citations).
4. C. Scoglio, W. Schumm, P. Schumm, T. Easton, S. Chowdhury, A. Sydney, and M. Youssef. Efficient mitigation Strategies for Epidemics in Rural Regions. PLoS ONE, 2019 (9 citations).

Submitted

1. A. Sydney, D. S. Ochs, C. Scoglio, D. Gruenbacher, and R. Miller. Software Defined Networking (SDN) in GENI: Experimental Evaluation of OpenFlow Technology for Smart Grids, June 2018, submitted to Elsevier Computer Networks Special Issue on Future Internet Testbeds (Under review).

In Preparation

1. A. Sydney, X. Ou, C. Scoglio, and D. Gruenbacher. Moving Target Defense System using Software Defined Networking.

Conferences

Published

1. A. Sydney, C. Scoglio, and D. Gruenbacher. The Impact of Optimizing Algebraic Connectivity in Hierarchical Communication Networks for Smart Grids, IEEE PES Innovative Smart Grid Technologies (Accepted for publication December 2020).
2. A. Sydney, C. Scoglio, P. Schumm, and R. Kooij. Elasticity: Topological Characterization of Robustness in Complex Networks. In Proceedings of IEEE/ACM Bionetics, Hyogo, Japan, 2017.

In Preparation

1. A. Sydney, C. Scoglio, and D. Gruenbacher. Software Defined Networking-Traffic Engineering: A Performance Comparison of Multiprotocol Label Switching and OpenFlow for Smart Grid Operation.

Invited Talks and Posters

1. Experimental Evaluation of Software Defined Networking for Smart Grids, K-State Smart Grid Lab Inauguration, Oct 2020.
2. Software Defined Networking in GENI: Using OpenFlow to Support Cyber Physical System Traffic, GENI Engineering Conference, July 2020.
3. A Complex Network Approach to Control Epidemics in Rural Regions. NSF Cyber-Physical Systems Luncheon for the U.S. Senate. Hart Senate Office Building, Washington D.C., July 2017.

Research Proposals and Grants

1. GENI: Transforming our World Through the Pursuit of Knowledge in Software Defined Networking
   Sponsor: GENI Project Office
   Investigators: D. Gruenbacher, C. Scoglio, A. Sydney (PI)
   Amount: $200,000 for 2 years
   Status: Pending

2. Smart Grid Communication and Experimentation on GENI*
   Sponsor: Engineering Power Affiliates Program
   Investigators: D. Gruenbacher, C. Scoglio
   Amount: $25,000 for 1 year
   Status: Awarded March 2021

3. Smart Grid Communication, Control, and Cyber Security Analysis and Experimentation on GENI*
   Sponsor: Engineering Power Affiliates Program
   Investigators: D. Gruenbacher, C. Scoglio
   Amount: $23,996 for 1 year
   Status: Awarded March 2020

*Research proposals and grants that I provided substantial contributions.

Service, Memberships, and Awards

Cyber Defense Club (K-State), Member	Sept 2021 – Present
Reviewer for the Computer Networks Journal, Elsevier	Dec 2021 – Present
NS-3-Users Google Group	Aug 2019 – Present
National Society of Black Engineers (NSBE), Member	Aug 2016 – Present
Institute of Electrical and Electronics Engineers (IEEE), Member	Aug 2014 – Present
Outstanding Graduate Teaching Assistant	May 2021

CLAUDIA GARCIA

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QUALIFICATIONS SUMMARY

Ph.D. Agronomy student with more than four years of experience working in labs and serving as a graduate teaching assistant. Broad science knowledge in animal and plant biology, pharmacology, and chemistry. Practical expertise in laboratory research, data collection/analysis, and project management in the area of plant biology. Teaching and presenting experience, including training undergraduate students to extract information from biological databases. Fluent in English and Spanish with basic knowledge of French.

EDUCATION

Ph.D. in Agronomy, emphasis in Plant Molecular Biology May 2023
Kansas State University, Manhattan, KS

Grado de Licenciatura (M.S.) in Pharmacy June 2019
University of Barcelona, Barcelona, Spain

Licenciado (B.S.) in Pharmacy June 2015
University of Barcelona, Barcelona, Spain

LABORATORY AND TECHNICAL SKILLS

Molecular Genetics/Genomics:
DNA / RNA Isolation and Purification; Southern, Northern, and Western Blots; RNA In-Situ Hybridization Isoelectric Focusing; Cloning; PCR; Protein Phosphorylation; Sequencing; SDS-PAGE

Cell Biology and Biochemistry Techniques:
Cell Fractionation; Polysome Isolation and Analysis; Histology; Light Microscopy
In Vitro Plant Tissue Culture and Plant Transformation

Languages:
SQL; UML; HTML

Applications:
MS Office; Photoshop; GDPro; DeltaGraph; Canvas; EndNote; NIH Image; Sequence Analysis Tools

RESEARCH EXPERIENCE

Graduate Research Assistant, Dept. of Agronomy Aug. 2019 - Present
Kansas State University, Manhattan, KS

- Collaborated with other graduate students and professor to investigate the mechanisms of heavy metal tolerance in plants.
- Worked with team to conduct research experiments to investigate the expression patterns of several Arabidopsis genes involved in those mechanisms.

Graduate Researcher, Department of Molecular and Cell Biology Sept. 2018 – June 2019
University of Texas, Dallas, TX

- Initiated research focused on the investigation of functional properties of a novel ribosomal protein.
- Utilized a variety of molecular detection techniques and genetic engineering technology.

TEACHING EXPERIENCE

Graduate Teaching Assistant Aug. 2020 – Present

Kansas State University, Manhattan, KS

- Develop course materials and lecture to introductory undergraduate classes in the areas of physics and chemistry.
- Grade tests and homework assignments for a total of 224 students in three sections.

PUBLICATIONS & PRESENTATIONS

Publications

D. Cline, L. MacGwen, **C. Garcia**, T. Lyeke. Enzymatic damage in cell fractionation, Agronomy Journal, Vol. 5, pp. 5-7, 2021.

Presentations

Design and Analysis of Plant Microarray Experimentation, International Congress on Plant Science and Molecular Biology, Atlanta, GA, June 2022