Rubi Quiñones, Ph.D.

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ACADEMIC APPOINTMENT

Southern Illinois University Edwardsville (SIUE) — **Edwardsville, IL**
Assistant Professor, Computer Science Department — 2022-Current

EDUCATION

University of Nebraska-Lincoln (UNL) — **Lincoln, NE**
Ph.D., Engineering: Computer Engineering - Computer Science — May 2022
Dissertation: Accurate Cosegmentation in High-Throughput and Multiple Feature Plant Image Sequences in Plant Phenotyping
Advisors: Ashok Samal, Sruti Das Choudhury, and Francisco Muñoz-Arriola, Christopher Bohn, Tala Awada, Hongfeng Yu

University of Texas-Rio Grande Valley (UTRGV) — **Edinburg, TX**
B.S., Computer Engineering — December 2016

1. TEACHING

Courses Taught

- CS 490/590 Computer Vision, 9 students — Spring 2024
- CS 45/596 Design & Analysis of Algorithms, 26 students — Spring 2024
- CS 599 Master's Thesis, 1 student — Spring 2024
- CS 495 Independent Study, 5 students — Spring 2024
- CS 595 Independent Study, 1 student — Spring 2024
- CS 490/590 Computer Vision, 12 students — Fall 2023
- CS 490/590 Digital Image Processing, 11 students — Fall 2023
- CS 456/596 Design & Analysis of Algorithms, 28 students — Fall 2023
- CS 599 Master's Thesis, 2 students — Fall 2023
- CS 596 Master's Project, 1 student — Fall 2023
- CS 495 Independent Study, 5 students — Fall 2023
- CS 590 Computer Vision, 9 students — Spring 2023
- CS 490/590 Digital Image Processing, 15 students — Spring 2023
- CS 599 Master's Thesis, 1 student — Spring 2023
- CS 596 Master's Project, 3 students — Spring 2023
- CS 595 Independent Study, 2 students — Spring 2023
- CS 490/590 Computer Vision, 19 students — Fall 2022
- CS 590 Computer Vision, 17 students — Fall 2022
- CS 595 Independent Study, 2 students — Fall 2022

Mentoring and Advising

MS Thesis Chair

- Sreeja Cheekireddy — Fall 2023 & Spring 2024
- Syeda Mariah Banu — Spring 2023 &Spring 2024

MS Project Chair

- Likith Kolassani — Fall 2023 & Spring 2024
- Ananda Vuda — Spring 2023 & Fall 2023
- Shriya Santoshi Devulapally — Spring 2023 & Fall 2023
- Sainath Talluri — Spring 2023 & Fall 2023

Independent Study (Master's Proposal Development)

- Sumitra Srestha — Spring 2024
- Sreeja Cheekireddy — Spring 2023
- Likith Kolassani — Spring 2023
- Shriya Santoshi Devulapally — Fall 2022
- Sainath Talluri — Fall 2022

Independent Study (Undergraduate Proposal Development)

- Jason Kattenbraker — Spring 2024
- Joseph Haenel — Fall 2023 & Spring 2024
- Logan Nitzsche — Fall 2023 & Spring 2024
- Caleb Sutton — Fall 2023 & Spring 2024
- Prassidhi Upadhyay — Fall 2023 & Spring 2024

Committee Member

- Ethan Boulanger, *MS Project*. "Optimizing the fit of an average 3D heart model to 3D MRI image data for segmentation of cardiac structures." — Spring 2023
- Madhuri, Thallam, *MS Project.* "Traffic Analysis and Severity Prediction using Machine Learning Algorithms." — Fall 2022

Undergraduate Research Creative Activities (URCA)

- Caleb Sutton, "DA3-BES+: A Multi-Agent Simulation with Population Dependent Behavioral Features." [**In Submission**] — Fall 2023 & Spring 2024
- Prasiddhi Upadhyay, "Artificial Intelligence in Resilience Assessments and Social-Ecological Systems." [**In Submission**] — Fall 2023 & Spring 2024
- Joseph Haenel, "Comprehensive Study of Deep Learning and Machine Learning Algorithms on Leaf Diseases in Sorghum and Maize." — Fall 2023 & Spring 2024
- Logan Nitzsche — Fall 2023 & Spring 2024

Undergraduate Senior Project

- Stanley Trevino, Trever Neumeister, Edward Nooney, Nathaniel Dyer, CS 499. "Parsing G2F Data." [**In Submission**] — Spring 2023 & Fall 2023
- Anthony Maliszewski, Ruixin Wang, Cody Wood, CS 499. "Plant-Eye." [**In Submission**] — Spring 2023 & Fall 2023

Mentorship Outside SIUE

- Benjamin Wingerter, *Independent Study. "*DA^3-BES: Exploring Complex Adaptive Systems Using Dynamic Multi-Agent Models for Honey Bee Colony Environment Simulation." [**Published**] Fall 2021-Fall 2023

2. RESEARCH

Publications

Published

- **Quiñones, Rubi.** "OSC-CO^2: Coattention and Cosegmentation Framework for Plant State Change with Multiple Features." Frontiers in Plant Science 14: 1211409. https://doi.org/10.3389/fpls.2023.1211409
- Benjamin Wingerter, **Rubi Quiñones**, and Dominic Cristiano. August 2023. DA^3-BES: Exploring Complex Adaptive Systems Using Dynamic Multi-Agent Models for Honey Bee Colony Environment Simulation. Teaching Issues and Experiments in Ecology, Vol. 19: Experiment #1.
- Cox, M., Harrison, H., Partelow, S., Curtis, S., Elser, S., Hammond Wagner, C., ..., **Rubi Quiñones**, & Whittaker, B. How academic podcasting can change academia and its relationship with society: a conversation and guide. Frontiers in Communication, 8, 65.
- F. E. Hogan, J. A. Fowler, C. D. Barnes, A. K. Ludwig , D. J. Cristiano, K., D. Morales, **R. Quiñones**, D. Twidwell, J. M. Dauer. "New multimedia resources for ecological resilience education in modern university classrooms." Eco-Sphere: Eco-Education Track. October 2022. http://doi.org/10.1002/ecs2.4245
- **Quiñones R**, Munoz-Arriola F, Choudhury SD, Samal A (2021) Multi-feature data repository development and analytics for image cosegmentation in high-throughput plant phenotyping. PLoS ONE 16(9): e0257001. https://doi.org/10.1371/journal.pone.0257001
- S. Gampa, **R. Quiñones**. "Data Driven Techniques for Hyperspectral Image Analysis," CRC Press, Taylor and Francis, 2020. ISBN: 9781315177304
- Firestone, J.W., **Quiñones, R.**, & Duncan, B.A. (2019). Learning from Users: An Elicitation Study and Taxonomy for Communicating small Unmanned Aerial System States Through Gestures. In *HRI 2019* – 14th ACM/IEEE *International Conference on Human-Robot Interaction* (pp. 163-171). [8673010] (ACM/IEEE International Conference on Human-Robot Interaction; Vol. 2019-March). IEEE Computer society. https://doi.org/10.1109/HR.2019.8673010

In Submission

- Vitor Sanches, **Rubi Quiñones**. "A Literature Review of Resiliency Metrics and Models." 2023.
- **R. Quiñones**, F. Munoz-Arriola, S. Choudhury, A. Samal. "Cosegmentation-Based Phenotype Computations." May 2022.

In Preparation

- Prasiddhi Upadhyay**, R. Quiñones.**, "Artificial Intelligence in Resilience Assessments and Social-Ecological Systems. 2024
- **R. Quiñones,** S. Choudhury, A. Samal. "HyperPheno: A data scientific approach to plant phenotyping analysis using hyperspectral imagery." May 2023.
- Alison K. Ludwig, **R. Quiñones**, and Daniel Rico. "Imaging System and Taxonomy for Carrion Beetle Identification," Environmental Education and Research. July 2023.
- Benjamin Wingerter, **R. Quiñones,** D. Christiano, Mark Vrtiska. "Automatic Telemetry Application." The Journal of Environmental Education March 2022.
- **R. Quiñones,** K. F. E. Hogan, A. Ludwig, L.K. Soh. "A 2D Multi-Agent Simulation Model for

Root Water Uptake". Environmental Education and Research. May 2023.

Software's

- DA^3-BES Bee Simulation Model: https://github.com/benwingerter/bee-simulation/releases — Fall 2023
- OSC-CO^2 Software: https://github.com/rubiquinones/OSC-CO2 — Spring 2023
- HypeRpheno Software: https://plantvision.unl.edu/Softwares/HypeRpheno.zip — Spring 2019

Datasets

- **Quiñones, R**., Samal, A., Das Choudhury, S., & Munoz-Arriola, F. (2022). Cosegmentation for Plant Phenotyping+ (CosegPP+) Data Repository Collected Via a High-Throughput Imaging System [Data set]. Zenodo. https://doi.org/10.5281/zenodo.6863013 — Fall 2023
- **Quiñones, R**., Munoz Arriola, F., Das Choudhury, S., & Samal. Ashok. (2021). Cosegmentation for Plant Phenotyping (CosegPP) Data Repository Collected Via a High-Throughput Imaging System [Data set]. In Multi-feature data repository development and analytics for image cosegmentation in high-throughput plant phenotyping. Zenodo. https://doi.org/10.5281/zenodo.5117176 — Spring 2019

Grants/Awards - $25,000

Accepted

- **Rubi Quiñones.** "OSC-CO^2 Research Publication." Publications Cost Funding Award." SIUE Publications Cost Funding Award - $2,000 — Fall 2023
- **Rubi Quiñones.** "Artificial Intelligence Working Group Workshop for Identifying Artificial Intelligence Techniques in Resilience." Rasmussen Grant - $5,000 — Fall 2023
- **Rubi Quiñones**. "A Multi-Agent Simulation to Understand the Environmental Influence on Plant Growth." SIUE Seed Grants for Transitional and Exploratory Projects (STEP) Grant - $16,000 — Spring 2023
- SIUE's Faculty Incentive Program - $2,000 — Spring 2023

Rejected

- Laura, Kair, Ellen, Zuckerman, **Rubi Quiñones. "**Customized Infant Feeding Accessories for Breastfeeding Success." National Institute of Health (NIH), Small Business Technology Transfer (STRR) Grant. — Spring 2023
- **Rubi Quiñones,** Carolyn Butts-Wilmsmeyer, Courtney Breckenridge. "Quantifying the Knowledge Discrepancy Between Computer and Plant Scientists in Plant Phenotyping." Agriculture Genome to Phenome Initiative Working Group Seed Grant. — Spring 2023
- Khaled Ahmed, Amer AbuGhazaleh, **Rubi Quiñones**. "Deep Learning Algorithm for Detecting Methane for Sustainable Livestock in Illinois." Illinois Innovation Network (IIN) Seed Grant — Fall 2022
- **Rubi Quiñones,** John Matta. "Knowledge Discovery using Image-Based Plant Datasets for Linking the Phenotype Response to Climate Change." — Fall 2022

United States Department of Agriculture (USDA) Agriculture and Food Research Initiative's (AFRI) Data Science for Food and Agricultural Systems (DSFAS)

Submitted

- Mark Ward, et al., **Rubi Quiñones (Senior Personnel).** "Bridges into a Statistical Major and Big Data Research Experiences Via Learning Communities." National Science Foundation Regional Innovation Engines (NSF Engines) — Fall 2022

In Preparation

- National Science Foundation (NSF) Computer and Information Science and Engineering Research Initiation Initiative (CRII) Grant — 2023
- NSF Faculty Early Career Development Program (CAREER) Award — 2023
- United States Department of Agriculture – Food and Agricultural Sciences National Needs Graduate and Postgraduate Fellowship (NNF) Grant Program. — 2022

Conference Presentations

- Computing Research Association- Widening Participation (CRA-WP) Session Speaker. *1-1 Mentoring: Academic/Career Advising.* San Francisco, California. April 20-22, 2023. — Spring 2023
- Computing Research Association- Widening Participation (CRA-WP) Session Speaker. *Perspectives from Grad Cohort Alums.* San Francisco, California. April 20-22, 2023. — Spring 2023
- North American Plant Phenotyping Network Keynote Speaker. *Advancing Computer Vision Using Collaborative Analytics of Deep Learning Networks for High Dimensional Data*, Saint Louis, MI. February 15, 2023 — Spring 2023

Invited Talks

- Panelist Speaker, SIUE's SWE Introduce a Girl to Engineering. February 25, 2023 — Spring 2023
- Colloquium Speaker, University of Delaware's Geography Series. *Advancing Computer Vision Using Collaborative Analytics of Deep Learning Networks for High Dimensional Data* March 3, 2023. — Spring 2023
- Panelist Speaker, UNL's National Research Traineeship (NRT). *Ask Previous NRT Alums.* November 9, 2022. — Fall 2022
- Colloquium Speaker, Saint Louis University – Computer Science Colloquium. *Advancing Computer Vision Using Collaborative Analytics of Deep Learning Networks for High Dimensional Data,* Saint Louis, MI. November 2, 2022. — Fall 2022

Workshops

- Artificial Intelligence Working Group Workshop, Southern Illinois University Edwardsville, December 1 – 4, 2023 — Fall 2023
- Open Science Grid User School for High-Performance Computing, University of Wisconsin-Madison. August 7 – 10, 2023. — Summer 2023
- Resilience Alliance Science Meeting, Oracle, Arizona, May 9 – 12, 2023. — Spring 2023
- Resiliency Metrics and Modeling Workshop, Stockholm University. — Spring 2023

February 6 – 10, 2023.

Honors

- First "e" Award for First-Time Principal Investigators on External Grants — Spring 2023
- Top 5% of Principal Investigators who submitted External Grants — Fall 2022

3. SERVICE

Department

- *Member,* Artificial Intelligence Certificate Committee. — Spring 2024-Current
- *Member,* Operating Papers Committee. — Spring 2024-Current
- *Member*, Cybersecurity Faculty Search Committee. — Spring 2023-Current
- *Social Director,* Computer Science Social Committee (2 events per semester) — Fall 2022-Current
- *Member,* Computer Science Graduate Committee. — Fall 2022-Current
- *Co-Organizer,* Engineering Day at the College of Engineering — Fall 2023
- *Member*, Computer Science Sabbatical Committee for Dr. Igor Crk. — Fall 2023
- Volunteer Speaker, CS 500 Faculty Research Survey. — Fall 2023
- *Member*, Computer Science Sabbatical Committee for Dr. Thoshita Gamage. — Fall 2022
- *Member*, Computer Science Chair Search Committee. — Fall 2022
- Volunteer Speaker, CS 500 Faculty Research Survey. — Fall 2022

School of Engineering

- *Chair*, Computer Committee — Fall 2023-Current
- *Co-Advisor,* Association of Computing Machinery - Women — Fall 2023-Current
- *Co-Advisor,* Society of Hispanic Professional Engineers — Spring 2023-Current

Southern Illinois University Edwardsville

- *Member,* URCA Board — Fall 2023-Spring 2024
- *Representative*, Graduate Student Awards Committee — Fall 2023-Spring 2024
- *Member,* Programs Review Team — Fall 2023-Spring 2024
- *Member,* Programs Review Committee — Fall 2023-Spring 2024
- *Member and Ambassador,* Center for Predictive Analytics — Summer 2023-Current
- *Vice President*, Hispanic/Latinx Faculty Staff Association — Spring 2023-Spring 2024
- *Co-Organizer,* Hispanic/Latinx Student Graduation Celebration — Spring 2023

External - National Science Foundation (NSF)

- *Reviewer,* NSF Grant. — Spring 2023
- *Reviewer*, NSF Grant. — Spring 2022
- *Reviewer*, NSF Fellowship. — Fall 2022

External – Journal Reviews

- Springer, Signal, Image and Video Processing Journal – 1 manuscript — Fall 2023

- Springer, Plant Molecular Biology Journal – 1 manuscript — Summer 2023
- Wiley, The Plant Phenome Journal – 2 manuscripts. — Spring 2023
  AME, Quantitative Imaging in Medicine and Surgery – 1 manuscript. — Fall 2022
- Springer, The Plant Methods Journal – 1 manuscript. — Fall 2022

External – Leadership

- *Co-Organizer*, 2024 NAPPN Conference Program Committee. — Fall 2023-Spring 2024
- *Leader*, High School Computational Thinking — Fall 2023-Current
- *Co-Organizer*, Women Faculty in Engineering and Computing Alliance — Fall 2022-Spring 2023
- *Co-Organizer*, 2023 NAPPN Conference Program Committee. — Fall 2022-Spring 2023
- *Leader,* NAPPN's Affinity Group: Young Professionals. — Fall 2022-Spring 2023
- *Board Member*, Nebraska's Lincoln Community Baby Closet. — Spring 2020-Spring 2023

Teaching Development

- IMPACT Academy Workshop — Spring 2023
- New Faculty Onboarding (6 workshops) — Fall 2022-Spring 2023
- Midweek Mentoring (1 workshop) — Fall 2022

Membership

- The North American Plant Phenotyping Network (NAPPN). — Fall 2022-Current
- Resilience Alliance Young Scholars (RAYS). — Fall 2018-Current
- Women Engineering & Computer Science Faculty Alliance. — Fall 2022-Current
- Hispanic/Latinx Faculty Staff Association at SIUE. — Fall 2022-Current

GRADUATE ACCOMPLISHMENTS

FELLOWSHIPS & SCHOLARSHIPS – $118,310

- Graduate Nonresident Fellowship - $33,500. 2019-2021
- Graduate Fellowship - $5,000. 2019-2021
- Regents Tuition Fellowship - $12,000. 2019-2021
- Grace Hopper Scholarship - $3,000. 2019
- UNL Othmer Graduate Fellowship - $24,000. 2017-2019
- Grad Cohort for Women Scholarship - $500. 2019
- Grad Cohort for Underrepresented Minorities Scholarship - $1,500. 2019
- MUMS Program Opening Scholarship - $500. 2018
- Grad Cohort for Women Scholarship - $500. 2019
- UNL Grace Hopper Scholarship - $1,000. 2017
- Hispanic Scholarship Fund – Intel Scholarship - $5,000. 2015
- UTRGV Presidential Scholarship - $25,000. 2014-2016
- GM/EEOC Endowed Scholarship - $5,000. 2014-2015
- STARS Scholarship - $1,000. 2015-2016

AWARDS & RECOGNITION - $3,810

- 2022 North American Plant Phenotyping Network (NAPPN) Graduate Student Award in Research and Service - $$ 2022
- NAPPN Travel Award - $700 2022
- UNL Registration Award for NAPPN - $110 2022
- Grace Hopper Celebration Research Scholar Mentor Award - $3,000. 2019

INVITED TALKS

- Natural Legacy Workshop. *Using Drones to Reach New Ground with Prescribed Fire,* Nebraska City, NE. October 26, 2017. 2017
- Mid-American Transport Center Scholars Program. *Voices from the Field: UTCRS REUs and MATC Interns*, Lincoln, NE. September 1, 2017. 2017
- The Tab. *It's time we realized Computer Science isn't just for boys,* Virtual. March 3, 2016. 2016
- Code RGV's Tech Tuesday. *IgniteCS. Powered by: Google*, McAllen, TX. June 30, 2016. 2016

CONFERENCE PRESENTATIONS

- **R. Quiñones.** *Accurate Cosegmentation in High-Throughput and High Dimensional Plant Image Sequences*. North American Plant Phenotyping Network Annual Conference, Athens, Georgia. February 22, 2022. 2022
- Mig Shyaka, **R. Quiñones**, Francisco Munoz-Arriola. *Hydroclimate data improvement for extreme-event diagnostics in Rwanda using Random Forest.* 21st. Conference on Artificial Intelligence for Environmental Science in AMS 102nd Annual Meeting, Houston, TX. January 24, 2022. 2022
- **Rubi Quiñones,** F. Munoz-Arriola, S. Das Choudhury, A. Samal. *Advancing Detection of Dynamic Environmental Effects on Plants Using Computer Vision Analytics in High-Throughput Phenotyping Facilities*. 21st Conference 2022

on Artificial Intelligence for Environmental Science in AMS 102nd Annual Meeting, Houston, TX. January 24, 2022.

- P. Sarzaeim, H. Aslam, **R. Quiñones**, F. Munoz-Arriola. *Development of climatic spatiotemporal and analytical visualization for maize response to climate.* 21st Conference on Artificial Intelligence for Environmental Science in AMS 102nd Annual Meeting, Houston, TX. January 24, 2022. 2022
- **Rubi Quiñones,** F. Munoz-Arriola, S. Das Choudhury, A. Samal. *Using Image Cosegmentation Methods to Improve Foreground Segmentation Accuracy in Plant Phenotyping*. 2021 Midwest Women in Science Conference, Virtual. September 18, 2021. 2021
- J. Carter, P. Sarzaeim, D. Jarquin, **R. Quiñones**, E. Tanghanwaye. "The Genetic by Environment (GEEN) Phenotypic Predictive System Software Development". NAPPN Annual Conference, 2021. 2018
- **Rubi Quiñones.** *The Importance of Graduate School & Research*. Regional Leadership Development Conference, McAllen, TX. March 12, 2018.

LEADERSHIP EXPERIENCE

- Council for Resilience Education *Treasurer* at UNL. 2021-2022
- Resilience Alliance Young *Scholar.* 2020-2022
- Computing Research Association – Women (CRA-W) *Graduate Mentor.* 2019
- Hispanic Scholarship Fund *Scholar.* 2019
- UNL Preparing Future Faculty *Fellow*. 2019
- Bangladesh Student Association *President* at UNL. 2019
- Bangladesh Student Association *Vice President* at UNL. 2019
- Association for Computing Machinery – Women *President* at UTRGV. 2016
- Hack&&Make *Outreach Coordinator* at UTRGV. 2015-2016

OUTREACH

- *Volunteer*, Council for Resilience Education 2020
  Designed online free-access course in resiliency and provided free teaching materials for professors.
- *Volunteer*, University Transportation Center for Railway Safety 2016
  Providing hands-on activities in mechanical engineering and computer science in an 8-week program.
- *Coordinator*, Google Ignite CS 2014-2015
  Created a 12-week program that taught women, and minorities in a low-income school (7-12 grade) computer science concepts.
- *Coordinator*, Weekly Hackathons at UTRGV 2014
  Provided rapid hackathons at UTRGV to give undergraduates and opportunity to develop projects for their curriculum vitae

MENTORING AND ADVISING

- Ms. Nora Lucas, undergraduate researcher 2021-2022
  School of Natural Resources, UNL.
- Mr. Victor Moreno, undergraduate researcher 2021-2022
  School of Natural Resources, UNL.
- Mr. Mig Shyaka, undergraduate researcher 2021-2022
  School of Natural Resources, UNL.
- Mr. Benjamin Wingerter, undergraduate researcher 2021-2022
  School of Computing, UNL.
- Mr. Linhan Li, undergraduate researcher 2021
  School of Computing, UNL.
- Mr. Rongsong Yang, undergraduate researcher, UCARE fellow 2019
  School of Computing, UNL

SERVICE ACCOMPLISHMENTS

- Science Literacy 101, *Poster Judge,* at UNL. 2022
- Undergraduate Creative Activities and Research Experience (UCARE) 2022
  Research Application *Reviewer* at UNL.
- Science Literacy 101, *Poster Judge* at UNL. 2021
- UCARE Research Application *Reviewer* at UNL. 2021
- Council for Resilience Education *Member*. 2019-2021
- Graduate Travel Awards Program *Reviewer* at UNL. 2019
- Nebraska Summer Research Symposium *Poster Judge* at UNL. 2019
- UCARE Research Application *Reviewer* at UNL. 2019
- Undergraduate Research Fair Poster Competition *Poster Judge* at UNL. 2019

TEACHING

Instructor, Undergraduate Independent Study Course, UNL 2021

- Course: Introduction to Python Tools for Research Analytics

Graduate Teaching Instructor/Assistant, UNL 2018-2019

- Course: NRES 879 – Hydroclimatology 2020
- Course: CSCE 361 – Software Engineering 2018
- Course: CSCE 235 – Discrete Algorithms and Data Structures 2018
- Course: CSCE 231 – Computer Systems Engineering 2017