

# Gloire Rubambiza, Ph.D.

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## Education

**Ph.D. in Computer Science.** December 2024 (Official conferral).

Cornell University – Ithaca, NY

**Thesis Title:** *Towards Resilient Rural Networking Infra: Seamless Visions, Seamful Realities*

**Advisors:** Dr. Hakim Weatherspoon, Dr. Phoebe Sengers

**M.S. in Computer Science.** May 2022.

Cornell University – Ithaca, NY

**B.S. in Computer Science;** Minor – Math. April 2018.

Grand Valley State University – Allendale, MI

## Research Interests

Computer Systems & Networking, Human-Computer Interaction (HCI)

## Publications

### Refereed Conference Papers

It is standard in computer science papers for lead student authors and advisors to go first and last, respectively

- **Gloire Rubambiza**, Phoebe Sengers, Hakim Weatherspoon, and Jen Liu, “Seam Work and Simulacra of Societal Impact in Networking Research: A Critical Technical Practice Approach”, ACM Conference on Human Factors in Computing Systems (**ACM CHI ’24**), 2024
- **Gloire Rubambiza**, Shiang-Wan Chin, Sachille Atapattu, Mueed Rehman, José F. Martínez, and Hakim Weatherspoon, “Comosum: An Extensible, Reconfigurable, and Fault-Tolerant IoT Platform for Digital Agriculture”, USENIX Annual Technical Conference (**USENIX ATC ’23**), 2023
- **Gloire Rubambiza**, Braulio Dumba, Andrew Anderson, and Hakim Weatherspoon, “EdgeRDV: A Framework for Edge Workload Management at Scale”, IEEE International Conference on Edge Computing and Communications (**IEEE Edge ’23**), 2023
- **Gloire Rubambiza**, Phoebe Sengers, and Hakim Weatherspoon, “Seamless Visions, Seamful Realities: Anticipating Rural Infrastructural Fragility in Early Design of Digital Agriculture”, ACM Conference on Human Factors in Computing Systems (**ACM CHI ’22**), 2022

### Refereed Journal Papers

- Lara Roeven, Steven Wolf, Phoebe Sengers, Jen Liu, **Gloire Rubambiza**, Donny Persaud, and Hakim Weatherspoon, “Analyzing abstraction in critical agri-food studies and computer science: Toward interdisciplinary analysis of digital agriculture innovation”. *Agriculture and Human Values*, 2024

- Shiang-Wan Chin, **Gloire Rubambiza**, Yifan Zhao, Keyvan Malek, and Hakim Weatherspoon, “Realtime Optimization and Management System (ROAM): A Decision Support System for Digital Agriculture Systems”, *Smart Agricultural Technology*, 2024
- **Gloire Rubambiza\***, Fernando Romero Galvan\*, Ryan Pavlick, Hakim Weatherspoon, and Kaitlin M. Gold, “Towards Cloud-Native, Machine Learning Based Detection of Crop Disease with Imaging Spectroscopy”, *Journal of Geophysical Research, Biogeosciences*, 2023

## In Preparation/Review

- **Gloire Rubambiza**, Fernando Romero Galvan, Braulio Dumba, Andrew J. Anderson, Martin M. Perez, Chris Myers, Julio O. Giordano, Kaitlin M. Gold, and Hakim Weatherspoon, “Towards Cloud-Native, Scalable, and Fault-Tolerant Agricultural Data Analytics with KubeStellar and the Software-Defined Farm”
- Jen Liu, Phoebe Sengers, Lara Roeven, **Gloire Rubambiza**, Donny Persaud, Hakim Weatherspoon, and Steven Wolf, “Material Anticipation: How Realities Are Imagined and Produced in Networking Infrastructure Development for Digital Agriculture”, *ACM CSCW*, 2024
- Vesna Bacheva, Imani Madison, Mathew Baldwin, Mark Beilstein, Douglas F. Call, Jessica A. Deaver, Kirill Efimenko, Jan Genzer, Khara Grieger, April Z. Gu, Mehmet Mert Ilman, Jen Liu, Sijin Li, Brooke K. Mayer, Anand Kumar Mishra, Juan Claudio Nino, **Gloire Rubambiza**, Phoebe Sengers, Robert Shepherd, Jesse Woodson, Hakim Weatherspoon, Margaret Frank, Jacob Jones, Rosangela Sozzani, and Abraham Stroock. “Transdisciplinary collaborations for advancing sustainable and resilient agricultural systems”. *Global Change Biology*, 2024

## Workshop Papers

- **Gloire Rubambiza**, Phoebe Sengers, and Hakim Weatherspoon, “Paradoxes in Producing the Future of Farm Work: Anticipating Social Impact through the Lens of Early Adopters”, *Automation Experience at the Workplace Workshop at ACM CHI ’21*, 2021

## Technical Reports

- Danny Adams, **Gloire Rubambiza**, Pablo Fiori, Xinwen Wang, Hakim Weatherspoon and Robbert Van Renesse, “Tamperproof Provenance-Aware Storage for Mobile Ad Hoc Networks”, 2020

## Extended Abstracts

- **Gloire Rubambiza**. “Towards Resilient Rural Networking Infrastructure for Digital Agriculture”. Doctoral Consortium at CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference (**ACM TAPIA ’23**). 2023
- **Gloire Rubambiza**, Hakim Weatherspoon, José F. Martínez, and Abraham Stroock, “WaterGuard: Toward Cheap Automated Irrigation Systems Powered by the Cloud and TV White Spaces”, CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference (**ACM TAPIA ’20**), 2020
- Martin Matias Perez, **Gloire Rubambiza**, Brandon Barker, Hakim Weatherspoon, and Julio O. Giordano, “Automated real-time integration of data from multiple sensors and nonsensor systems for prediction of dairy cow and herd status and performance”, *Journal of Dairy Science*, Vol. 103, Suppl. 1, 2020
- Kolbeinn Karlsson, Danny Adams, **Gloire Rubambiza**, Zangyueyang Xian, Robbert Van Renesse, Hakim Weatherspoon, and Stephen Wicker, “Untethered: Deployable Blockchains for IoT Environments”, In Proceedings of the ACM Symposium on Cloud Computing (**ACM SoCC ’18**), 2018

## Presentations

### Conference Talks

- Seam Work and Simulacra of Societal Impact in Networking Research: A Critical Technical Practice Approach. ACM Conference on Human Factors in Computing Systems (ACM CHI). Honolulu, HI, May 2024
- Towards Resilient Rural Networking Infrastructure for Digital Agriculture. Doctoral Consortium at CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference. Dallas, TX, September 2023
- Comosum: An Extensible, Reconfigurable, and Fault-Tolerant IoT Platform for Digital Agriculture. USENIX Annual Technical Conference (USENIX ATC). Boston, MA, July 2023
- EdgeRDV: A Framework for Edge Workload Management at Scale. IEEE International Conference on Edge Computing and Communications (IEEE Edge). Chicago, IL, July 2023
- Seamless Visions, Seamful Realities: Anticipating Rural Infrastructural Fragility in Early Design of Digital Agriculture. ACM Conference on Human Factors in Computing Systems (ACM CHI). New Orleans, LA, May 2022
- Measurement and Statistical Analysis of Submarine Internet Cable Performance. Leadership Alliance National Symposium. Hartford, CT, August 2017
- Improving African Internet Traffic through Maximization of Node Centrality. 22<sup>nd</sup> Annual University at Buffalo McNair Summer Research Conference. Buffalo, NY, July 2016

### Seminar Talks

- Towards Resilient Rural Networking Infrastructure: Seamless Visions, Seamful Realities. GVSU College of Computing Distinguished Speaker Series. Grand Rapids, MI, 2024
- Towards Resilient Rural Networking Infrastructure: Seamless Visions, Seamful Realities. Cornell CS PhD Defense Seminar. Ithaca, NY, 2024
- Scalable Field Computing — the Software-Defined Farm (SDF). Center for Research on Programmable Plant Systems (CROPPS) Annual NSF Site Visit. Ithaca, NY, 2024
- Towards Resilient Rural Networking Infrastructure for Digital Agriculture. Princeton University CS HCI Seminar. Princeton, NJ, 2024
- Towards Resilient Rural Networking Infrastructure for Digital Agriculture. UIUC CS Systems Seminar. Urbana-Champaign, IL, 2023
- Towards Resilient Rural Networking Infrastructure for Digital Agriculture. University of Texas at Austin CS Systems Seminar. Austin, TX, 2023
- Towards Resilient Rural Networking Infrastructure for Digital Agriculture. Stanford University HCI Lunch. Stanford, CA, 2023
- Comosum: An Extensible, Reconfigurable, and Fault-Tolerant Platform for Digital Agriculture. Northeastern University pre-OSDI/ATC Workshop. Boston, MA, 2023
- Towards Resilient Rural Networking Infrastructure for Digital Agriculture. University of Washington CSE Systems Seminar. Seattle, WA, 2022
- Seamless Visions, Seamful Realities: Anticipating Rural Infrastructural Fragility in Early Design of Digital Agriculture. University of Washington ICTD Seminar. Seattle, WA, 2022
- Paradoxes in Producing the Future of Farm Work: Anticipating Social Impact through the Lens of Early Adopters. IBM Hybrid Cloud Academic Project Forum (Virtual). 2021

- Paradoxes in Producing the Future of Farm Work: Anticipating Social Impact through the Lens of Early Adopters. FarmBeats User Community Workshop (Virtual). 2021
- Towards a Software-Defined Farm. Cornell Life Sciences Lecture Series. Ithaca, NY, 2019

## Posters

- Toward Comprehensive Crop Health Monitoring Engineered *in planta* Reporters and Rural Field Sensing Systems. Center for Research on Programmable Plant Systems (CROPPS) Yearly Symposium. 2024.
- Experience in Designing and Implementing a Cloud Native Framework for Farm Data Analytics. KubeCon/CloudNativeCon North America. 2024
- SDF 2.0: Towards a Cloud-Native, Scalable and Fault-Tolerant Platform for Digital Agriculture. KubeCon/CloudNativeCon Europe. 2024
- Toward Cheap Automated Irrigation Systems Powered by the Cloud and TV White Spaces. CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference. 2020
- An IoT-friendly Blockchain for Coordination and Accountability. The Cornell, Maryland, Max Planck Pre-doctoral Research School. 2019
- An IoT-friendly Blockchain for Coordination and Accountability. Public Safety Broadband Stakeholder Meeting (PSCR). 2019
- Measurement and Statistical Analysis of Submarine Internet Cable Performance. Grand Valley State University Student Scholars Day. 2018
- Measurement and Statistical Analysis of Submarine Internet Cable Performance. Michigan AGEF Alliance Fall Conference. 2017
- Improving African Internet Traffic through Maximization of Node Centrality. Grand Valley State University Student Scholars Day. 2017
- Improving African Internet Traffic through Maximization of Node Centrality. Grand Valley State University Summer Scholar Symposium. 2016

## Honors and Awards

Cornell Commencement CIS Ph.D. Degree Marshal	May 2024
SUNY Provost Diversity Fellowship (\$31,313)	November 2023
Graduate School Dean's Scholar	November 2023
Best Doctoral Presentation - Tapia Doctoral Consortium (\$1000)	September 2023
NSF-NRT Digital Plant Science Fellowship (\$72,658)	March 2023
Cornell Bowers CIS Distinguished Leadership in Service (\$500)	April 2023
Microsoft Cornell Digital Agriculture Fellowship (\$11,250)	June 2020
NSF-GRFP Honorable Mention	March 2020
NSF-NRT Digital Plant Science Fellowship (\$140,350)	February 2020
Diversifying LEAdership in the Professoriate (LEAP) Fellowship	April 2018
Cornell University Fellowship (\$62,678)	April 2018
Achievement Rewards for College Scientists (\$17,500, Decl.)	April 2018
UF Graduate School Preeminence Award (\$38,319, Decl.)	March 2018
Paul G. Allen School First-Year Ph.D. Fellowship (\$43,836, Decl.)	January 2018
Grand Finish Grant (\$1000)	August 2017
Upsilon Pi Epsilon Honor Society	October 2017
Eric Jon Gillette Memorial Scholarship (\$3000)	April 2016
Ronald E. McNair Scholar	October 2015
Grand Valley Grant (\$8500)	August 2014

Grand Valley Laker Scholarship (\$4000)	August 2014
Michigan State Competitive Scholarship (\$3000)	August 2014
Rivertown Community Commitment Scholarship (\$1000)	April 2014

## Travel Grants

KubeCon/CloudNativeCon North America 2024 (\$1300)	September 2024
Tapia Celebration of Diversity in Computing Conference (\$600)	September 2023
NextProf Nexus 2023 (\$660)	August 2023
USENIX Annual Technical Conference 2023 (\$600)	July 2023
CSST Summer Research Institute 2023 (\$600)	June 2023
Networked Systems Design and Implementation 2022 (\$800)	April 2022
Symposium on Operating Systems Principles 2019 (\$1,365)	October 2019
CRA URMD Grad Cohort 2019 (\$1200)	March 2019
ACM Symposium on Cloud Computing 2018 (\$700)	October 2018
Tapia Celebration of Diversity in Computing Conference (\$600)	September 2018

## Professional Service

ACM CHI 2024	Reviewer	October 2023
ACM SIGCOMM SNIP2+	Workshop Co-organizer	September 2023
ACM CSCW 2023	Reviewer	February 2023
IEEE ICDSN	Student Volunteer	June 2017

## Industry Experience

<b>IBM Research</b>	Research Intern	September 2022 - December 2022
<ul style="list-style-type: none"> <li>Architected scalable methods for data and workload management on millions of edge devices</li> <li>Filed patent application (pending) on state and workload management at the edge</li> </ul>		
<b>Meta (Facebook)</b>	UX Research Intern	May 2022 - August 2022
<ul style="list-style-type: none"> <li>Improved engineering experience with code deletion projects using internal tools</li> <li>Executed new research on engineering pain points at the intersection of code and data deletion</li> </ul>		
<b>IBM Research</b>	Research Intern	May 2021 - August 2021
<ul style="list-style-type: none"> <li>Implemented a Kubernetes-native data mining platform for dozens of AI hardware engineers</li> <li>Research results uncovered \$11,000 in potential AWS cloud consumption savings per week</li> </ul>		
<b>Collective Idea</b>	Software Development Intern	August 2016 - December 2016
<ul style="list-style-type: none"> <li>Developed a predictive cron job failure algorithm for the Dead Man's Snitch application</li> <li>Pair-programmed with senior developers on in-house projects such as add.a.lingua</li> </ul>		

## Teaching Experience

Machine Learning Application to Plant Science (PLSCI 7202)	Fall 2021
Pre-Sophomore Summer Program in Computer Science (CS 3410)	June 2020
Computer System Organization and Programming (CS 3410)	Spring 2020
SoNIC Summer Research Workshop	June 2019

## Media

### 2024

- **GVSU College of Computing:** “The first College of Computing alumnus graduates with a PhD from Cornell University” September 30, 2024
- **GVSU Office of Undergraduate Research and Scholarship (OURS):** “OURS Student Spotlights” August 14, 2024
- **Cornell Bowers CIS:** “‘Architects of the Future’ Recognized During Cornell Bowers CIS Ceremonies” May 28, 2024

### 2023

- **Cornell Bowers CIS:** “Rubambiza receives best doctoral presentation at TAPIA conference for digital ag work.” November 8, 2023
- **Los Angeles Times:** “NASA technology can spot wine grape disease from the sky. The world’s food supply could benefit.” September 5, 2023
- **NASA Earth Press Release:** “NASA helps spot wine grape disease from skies above California.” August 4, 2023
- **NASA JPL Media Office:** “NASA Helps Spot Wine Grape Disease From Skies Above California” August 4, 2023 - Picked up by Wine Business, SlashGear, The Sacramento Bee, Hot Hardware, KTLA, Hacker News
- **Cornell Bowers CIS,** “Cornell Bowers CIS celebrates second annual DEIB Awards”, May 4, 2023

### 2022

- **Cornell Chronicle:** “Researchers consider invisible hurdles in digital ag design.” June 22, 2022
- **Cornell Bowers CIS:** “Digital Ag Systems Won’t Be Plug-and-Play - And That’s Okay” June 21, 2022

### 2021

- **School News Network:** “I’m hoping the world will be my oyster” April 23, 2021

### 2019

- **Cornell Bowers CIS:** “Inspire - Innovate - Impact: CIS@20 Celebratory Video” October 2019

## Undergraduate Research Experience

University of Colorado Boulder SMART Program  
Ronald E. McNair Scholars Summer Research Program

June 2017 - August 2017  
May 2016 - August 2016

## Masters Students Advised

Kevin Huang (CS), Yifan Zhao (CS)

## Undergraduate Student Independent Project Advisee

Annie Kimmel (ECE), Mueed Ur Rehman (ECE), Steven Long (CS)  
Raheel Yanful (CS), Steven Owusu (CS)  
Ysabel Tan (ECE), Christine Ahn (ECE)  
Pablo Fiori (CS)

## Mentoring and Service

Cornell CIS Diversity Council	Graduate Representative	2019 - 2021
GSGIC/WICC/GradSWE Graduate School Panel	Panelist	April 2021
Cornell CS PhD Mentoring Program	Mentor	2019 - 2020
Cornell URM Career Fair Prep	Graduate Reviewer	September 2019
Cornell, Maryland, Max Planck Summer School	Cornell Representative	August 2019
SoNIC Summer Research Workshop	Graduate Panelist	June 2019
Cornell McNair Scholars Graduate Application Panel	Graduate Panelist	October 2018

## Volunteering, Outreach, and Leadership Experience

CROPPOS at Ithaca Farmers' Market	Representative	September 2024
IBM P-TECH Program	Presenter	July 2021
The Village at Ithaca	Student Achievement Coach	2019
The Immigrant Connection	Citizenship Class Tutor	2017
Samaritas	Cultural Mentor/ESL Tutor	2016
GVSU Office of Undergraduate Research & Scholarship	Session Host	April 2016