

# Roland Oruche

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## Education

**Ph.D. Computer Science | University of Missouri – Columbia | Advisor: Prasad Calyam | Aug 2019 – May 2023**

- Cumulative GPA: 3.73/4.00
- Awards: Dean's Scholar Fellow (2019) | Multicultural Engineering Program Graduate Fellow (2019 – Present)

**B.S. Information Technology | University of Missouri – Columbia | Aug 2015 – May 2019**

- Minors: Mathematics, Computer Science
- Awards: MU Diversity Scholarship (2015 – 2019) | Dean's List (2015 – 2019)

## Relevant Experience

**Graduate Research Assistant | Cyber Intelligence Center | Advisor: Prasad Calyam | Aug 2019 – Present**

- Investigated solutions to augment the COVID-19 literature process via evidence-based recommender system (RS)
- Reduced clinicians' manual literature workflow using ML and NLP techniques across 10,000+ medical journals
- Research work [www.KnowCOVID-19.org](http://www.KnowCOVID-19.org) featured in MU Campus News release on RS for large scale applications
- Technologies/Tools: Python 3 • Java • Angular • RESTful APIs • Spring Boot • Apache {Maven, Spark}

**Graduate Research Mentor | NSF REU in Consumer Networking Technologies | May – July 2019**

- Investigated ML-based anomaly detection system designs for cybersecurity attacks in social VR systems
- Applied a multi-label KNN algorithm and statistical analysis to classify network/application-based attacks
- Minimized disruption of security and privacy attacks in VR systems and improved user immersive experience
- Technologies/Tools: Python 3 {TensorFlow, NumPy, Pandas} • JavaScript • NSF GENI Cloud • Docker

**Undergraduate Research Assistant | VIMAN Lab | Advisor: Prasad Calyam | Apr 2018 – May 2019**

- Collaborated with graduate research assistants to develop an NSF-funded VR application for autism students
- Co-lead a research study on 12 subjects comparing existing desktop learning platforms with VR application
- Increased subjects' quality of experience by 14% using performance measures from the VR education platform
- Technologies/Tools: JavaScript • Unity • C/C++ • Google Cloud • Docker • Version Control {Git}

**Research Intern | NSF REU in Consumer Networking Technologies | May – July 2018**

- Conducted research on cybersecurity threats to understand vulnerabilities in well-defended VR learning systems
- Utilized threat-to-component system mappings to design a risk assessment framework for generating risk scores
- Evaluated insights of associated risks in various system modules to inform proper VR policy management
- Technologies/Tools: JavaScript • HTML/CSS • SQL • NSF GENI Cloud • Agile • Version Control {Git}

## Publications

- **R. Oruche**, S. Valluripally, V. Akashe, A. Gulhane, P. Calyam, J. P. Stichter, Z. He, "A Next Generation Social Virtual Reality Learning Environment Platform for Special Education", *Submitted to the IEEE Transactions on Human-Machine Systems*. 2021.
- Y. Zhang, **R. Oruche**, S. S. Sivarathri, P. Calyam, "ScholarFinder: Knowledge Embedding based Recommendation using a Deep Embedded Clustering Model", *Submitted to the IEEE Transactions on Knowledge and Data Engineering*. 2020.
- **R. Oruche**, V. Gundlapalli, A. P. Biswal, P. Calyam, M. L. Alarcon, Y. Zhang, N. R. Bhamidipati, A. Malladi, H. Regunath, "Evidence-based Recommender System for a COVID-19 Publication Analytics Service", *Submitted to the IEEE Transactions on Services Computing Journal's Special Track on COVID-19 and Future Pandemics*. 2020.
- K. B. Vekaria, P. Calyam, **R. Oruche**, Y. Zhang, S. Wang, "'Bring-your-own' Plug-in Management Middleware Framework for Programmable Science Gateways", *Science Gateways Community Institute (SGCI) Gateways Conference*. 2020.
- S. S. Nuguri, P. Calyam, **R. Oruche**, A. Gulhane, S. Valluripally, J. P. Stichter, Z. He, "vSocial: A Cloud-based System for Social Virtual Reality Learning Environment Applications in Special Education", *Multimedia Tools and Applications (MTAP) Journal*. 2020.
- A. Gulhane, A. Vyas, R. Mitra, **R. Oruche**, G. Hoefer, S. Valluripally, P. Calyam, K. A. Hoque, "Security Privacy and Safety Risk Assessment for Virtual Reality Learning Environment Applications", *IEEE Consumer Communications & Networking Conference (CCNC)*. 2019.

## Leadership Activities

- **Volunteer & Teaching Assistant | EnCircle Technologies | Mar 2020 – Present**  
Assisted youth with Autism Spectrum Disorder (ASD) to develop technical skills for employment opportunities
- **Upsilon Pi Epsilon (ΥΠΕ) | University of Missouri | 2020 – Present**  
Student committee member; Recognized for my contributions in the creation of events for company outreach
- **National Society of Black Engineers (NSBE) | University of Missouri | 2019 – Present**  
Student committee member; Assisted workshops for professional/leadership development in the Black community
- **Graduate and Professional Student Leadership Retreat | University of Missouri | Mar – Apr 2020**