Jared Knofczynski

Ph.D. Student & Internet Data Science Researcher
jared@cs.uoregon.edu j-red Eugene, Oregon

Education

Spring 2022 – Present

University of Oregon, Department of Computer Science

Ph.D. Student studying Machine Learning for Networking Applications.

Fall 2018 – Winter 2022

University of Oregon, Clark Honors College

Graduated *summa cum laude* with a B.S. in Math, Computer Science, and Music Technology from the University of Oregon with Departmental Honors. Undergraduate GPA: 4.06.

Research and Work Experience

Spring 2022 – Summer 2022

A Conversational Intelligence Approach to Network Penetration Testing

Research conducted under the supervision of Doctors Ram Durairajan (University of Oregon) and Walter Willinger (NIKSUN) at the University of Oregon.

- Developed a machine learning conversational intelligence agent to facilitate the security of wireless networks.
- Built upon the ARISE framework (see "A Multi-Task Weak Supervision Framework" below) and the Lumi Chatbot interface to support natural language queries for network penetration testing while addressing the shortcomings of prior efforts.

Fall 2020 – Winter 2022

A Multi-Task Weak Supervision Framework for Network Measurements

Research conducted under the supervision of Doctors Ram Durairajan (University of Oregon) and Walter Willinger (NIKSUN) at the University of Oregon. To be published in IEEE JSAC in July 2022.

- Developed a multi-task machine learning framework to classify network latency data using weak supervision and compared this framework's efficacy compared to other single-task efforts.
- Built upon a previous noise classification framework and the weak supervision library Snorkel MeTaL to develop new labeling functions for anomaly classification and evaluated the efficacy of our novel approach.
- The result of this project was ARISE, a multi-task classification framework capable of training nearly 8x faster with over 40% higher accuracy compared to prior state-of-the-art single-task efforts. Findings were presented at the University of Oregon Undergraduate Research Symposium and will be published in the *IEEE Journal on Selected Areas in Communications* in July 2022.

Summer 2020 – 2021

Virtual STEM & Art Instructor

iD Tech Online Private Lessons

Led virtual one-on-one and small group classes teaching basic programming, computer science, digital art, and cybersecurity principles to students between the ages of 12 and 18.

Summer 2020

Combating COVID on College Campuses

Research conducted under the supervision of Doctors Lisa Mariott (OHSU) and Christof Teuscher (Teuscher Labs) at Portland State University.

- Collaborated with a team of other undergraduate researchers to simulate COVID-19 pathogen transmission in higher education classroom settings.
- With transmission data gathered by researchers from the Oregon Health & Science University, we used an agent-based modeling framework to model the effects of a variety of factors including social distancing, cleaning frequency, and the efficacy of ventilation on pathogen transmission in classroom settings.
- Presented findings to faculty from universities across the U.S. to address the importance of establishing proper cleaning, ventilation, and distancing procedures in classroom settings to limit the spread of COVID-19. Findings published in Portland State University's online archive.

Research and Work Experience (cont.)

Fall 2019 – Spring 2020

Computer Science Learning Assistant & Class Encore Instructor

University of Oregon, Department of Computer and Information Science

Held one-on-one office hours and small group study sessions to assist other undergraduate students in introductory computer science classes and introduce them to popular computer science concepts.

Awards and Honors

Fall 2022

Phillip W. and Judy A. Seeley Graduate Fellowship – $6,000

I was selected to receive the Phillip W. and Judy A. Seeley Graduate Fellowship to support outstanding graduate students in the Department of Computer and Information Science.

Winter 2022

Departmental Honors in Math and Computer Science

I graduated *summa cum laude* with Departmental Honors in Math and Computer Science from the Clark Honors College at the University of Oregon in Winter 2022.

Fall 2019, 2020, 2021

Ripple University Blockchain Research Initiative Scholarship – $5,000 x3

I was selected to receive the Ripple University Blockchain Research Initiative Scholarship in 2019, 2020, and 2021. Scholarships were awarded to students with a demonstrated interest in research related to cybersecurity and promise for outstanding academic success.

Fall 2021

Phillip Seeley Scholarship – $1,000

I was nominated for, and selected to receive, the Phillip Seeley Scholarship through the Department of Computer and Information Science. Nominees were evaluated based on the overall quality of their academic work, their commitment to learning, and their potential for further academic achievement.

Fall 2021

Jean Wittemyer Memorial Scholarship – $2,000

I was awarded the Jean Wittemyer Memorial Scholarship on the basis of my enrollment in the Clark Honors College and my demonstration of exceptional promise for academic achievement and a high degree of originality in my research.

Summer 2021

Vice President for Research and Innovation (VPRI) Undergraduate Fellowship – $5,000

I was selected as one of fourteen undergraduate students to receive the VPRI Undergraduate Fellowship, a fellowship awarded to support students conducting research or creative scholarship on an innovative project full-time during the summer.

Fall 2020

Clark Honors College Scholarship – $1,500

I was awarded this Clark Honors College Scholarship for outstanding achievement and promise for continued academic success.

Winter 2020

Louise Bishop Study Abroad Scholarship – $2,000

Awarded to support students conducting research outside the United States. I was selected for this award on the basis of previous academic achievement and demonstrated potential for future success.

Publications

2022

J. Knofczynski, R. Durairajan, and W. Willinger, "ARISE: A Multi-Task Weak Supervision Framework for Network Measurements," in *IEEE Journal on Selected Areas in Communications*, 2022, 2022, doi: 10.1109/JSAC.2022.3180783.

2020

J. Knofczynski, A. Killebrew Bruehl, B. Warner, and R. Shelton, "Combating COVID on College Campuses: The Impact of Structural Changes on Viral Transmissions," *Portland State University*, August 2020.

Additional research, scholarship, and reference information available upon request.