



VICEROY NORTHWEST INSTITUTE FOR CYBERSECURITY EDUCATION AND RESEARCH



CySER Virtual Seminar

Eduardo Serra

Boise State University

Structural Graph representation learning for National Security Applications and Beyond

Apr. 3, 2023, 3:10 – 4PM PDT

Team Link: [Click here to join the meeting](#)

Meeting ID: 287 304 495 40 | Passcode: wdM7Vw

Call in (audio only) +1 509-498-6399 | Phone Conference ID: 834 528 822#

Abstract:

Graph representation learning methods have attracted an increasing amount of attention in recent years. These methods focus on learning a numerical representation of the nodes and edges in a graph. Graph representation learning methods can be divided into two main categories, methods preserving the connectivity information of the nodes and methods preserving nodes' structural information. Connectivity-based methods focus on encoding relationships between nodes, with connected nodes being closer together in the resulting latent space. While there are a lot of works that focus on preserving node connectivity, only a few works focus on preserving nodes' structure. Properly encoding nodes' structural information is fundamental for many real-world applications as it has been demonstrated that this information can be leveraged to successfully solve many tasks where connectivity-based methods usually fail. A typical example is node classification. Structural representations are essential to learning general patterns in graphs and solving many classification tasks. This talk will discuss the importance of structural graph representation learning methods, also considering temporal graphs, and their applications in national security and beyond.

Bio:

Edoardo Serra is an Associate Professor in the computer science department at Boise State University and senior Researcher (Joint Appointment) at Pacific Northwest National Laboratory (PNNL). He received his Ph.D. degree in Computer Science Engineering from the University of Calabria, Italy, in 2012. His research interests focus on Graph Representation Learning, Unsupervised Neural Networks, Machine Learning Interpretability and Robustness, and ML/AI applications for National Security.



cyser.wsu.edu

