

PRABIN B. LAMICHHANE

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I am a Ph.D. Candidate in Computer Science with five years of working experience in Network Security, Anomaly Detection, Machine Learning, Data Science, and Graph Mining. Currently, I am working on research related to anomaly/fraud detection in dynamic networks using graph-based techniques.

EDUCATION:

Tennessee Tech University	Cookeville, TN
Ph.D. (Computer Science)	2018 – Present
GPA: 4/4	
Tennessee State University	Nashville, TN
M.S. (Computer and Information Sys. Engineering)	2016 – 2018
GPA: 4/4	
Tribhuvan University	Kathmandu, Nepal
B.E. (Electronics & Computer Engineering)	2011 – 2015
GPA: 3.72/4	

EXPERIENCES:

Tennessee Tech University	Cookeville, TN
Graduate Teaching and Research Assistant	2018 – Present

- *Currently working on research related to anomaly/fraud detection in streaming (dynamic) networks such as Denial-of-Service attacks (DoS) in computer networks, social networks impersonations, or fake recommendations in e-commerce networks, etc. using graph-based techniques like probabilistic, embedding, and sketching.*
- Assisted Courses: *Data Structures and Algorithms, Discrete Structures for CSC, Foundation of CSC, Database Management Systems*

Tennessee Tech University	Cookeville, TN
Internship (Research Assistant)	May 2018 – Aug 2018

- *Formally analyzed the transmission scheduling process of the WirelessHART networks using Satisfiability Modulo Theories (SMT). That is, this research formally models the WirelessHART networks configuration and various constraints (like number of channels, and flow deadline) as inputs and verifies the schedulability of the packets under certain success specifications.*

Tennessee State University	Nashville, TN
Graduate Research Assistant	2016 – 2018

- *Performed research on network security; finding a stepping stone path towards the node which has the highest impact on the network (i.e., the node whose exploitation causes the greatest loss on the organization). So that defenders can mitigate network attack problems by either changing any of the paths towards node or sifting node to the place where it will be more secure.*
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TECHNICAL SKILLS:

Language: Python, C, C++, MATLAB/Octave, SQL, LaTeX.

Software Tools: Tensorflow, Keras, Scikit-learn, Numpy, Scipy, Pandas, Matplotlib, Seaborn, Plotly, Tableau, Weka, Git/Github, Jupyter Notebook, NPView, Nmap, OPNET, Wireshark, NS2, Network Simulator.

Data Skill: Anomaly/Fraud Detection, Machine Learning, Data Mining, Data Visualization, Data Cleaning, Graph Mining, Time-series Analysis.

Database: MySQL, Oracle, SQL Server.

PUBLICATIONS:

2021 **P. B. Lamichhane**, W. Eberle, "Anomaly Detection in Edge Streams Using Term Frequency-Inverse Graph Frequency (TF-IGF) Concept," 2021 IEEE International Conference on Big Data (Big Data) 2021. pp. 661-667, doi: [10.1109/BigData52589.2021.9671424](https://doi.org/10.1109/BigData52589.2021.9671424).

2018 **P. B. Lamichhane**, L. Hong and S. Shetty, "A Quantitative Risk Analysis Model and Simulation of Enterprise Networks," 2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), 2018, pp. 844-850, doi: [10.1109/IEMCON.2018.8615080](https://doi.org/10.1109/IEMCON.2018.8615080).

Under Review **P. B. Lamichhane**, W. Eberle, "Self-Organizing Map Based Graph Clustering and Visualization on Streaming Graphs for Anomaly Detection". (Submitted to 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)).

Under Review **P. B. Lamichhane**, H. Mannering, W. Eberle, "Discovering Breach Patterns on the Internet of Health Things: A Graph and Machine Learning Anomaly Analysis". (Submitted to The Florida Artificial Intelligence Research Society (FLAIRS-35)).

Under Review R. Manicavasagam, **P. B. Lamichhane**, P. Kandel, D. Talbert, "Drug Repurposing for Rare Orphan Diseases using Machine Learning Techniques". (Submitted to The Florida Artificial Intelligence Research Society (FLAIRS-35)).

Under Process **P. B. Lamichhane**, W. Eberle, "Anomaly Detection in Graph Structured Data: A Survey" (Target date: Early March, 2022)

PRESENTATIONS:

Research Paper Presentation, 2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), University of British Columbia, Canada.

Research Presentation, on "Anomaly Detection in Edge Streams Using Term Frequency-Inverse Graph Frequency (TF-IGF) Concept", at the Graduate Student Seminar, 2021.

Research Paper Presentation, 2021 IEEE International Conference on Big Data (IEEE BigData 2021), Orlando, Florida, USA.

RESEARCH INTERESTS:

- Graph-based Anomaly Detection
 - Graph Embedding and Sketching
 - Cyber Security Data Analysis
 - Anomaly/ Fraud Detection
 - Machine Learning & Artificial Intelligence
 - Network Security
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CERTIFICATIONS:

- Machine Learning
 - Applied Data Science with Python
- Stanford University
University of Michigan
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