Chol Hyun Park

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EDUCATION

University of Nevada, Las Vegas — Las Vegas, NV
Ph.D., Computer Science — May 2025
Dissertation: *Anonymous Cyber Threat Intelligence Sharing on Blockchain*

Westmont College — Santa Barbara, CA
B.A., Computer Science — May 2018

RESEARCH EXPERIENCE

University of Nevada, Las Vegas — Las Vegas, NV
Graduate Research Assistant, Department of Computer Science — Jan 2021 – Present

- Developed Anonymous Cyber Threat Intelligence Sharing on Blockchain (Sponsored by DOE MSIPP Grant)
- Researched on Detecting Cyber Threat on SCADA systems using machine learning (Sponsored by DOE MSIPP Grant)
- Proposed A Secure Communication for CANBus (Sponsored by DOE MSIPP Grant)
- Researched on Multi-Path TCP, and multiple LEO Satellites communications (Sponsored by AFRL)
- Developed and Researched Named Data Networking architecture and performance, analyzing its advantages in data dissemination, security, retrieval speed, and cache efficiency compared to traditional IP-based networks (Sponsored by AFRL)

University of Nevada, Las Vegas — Las Vegas, NV
Graduate Research Assistant, Department of Electrical Engineering — Apr 2021 – July 22

- Developed a web platform enabling seamless buying and selling of renewable energy generated from photovoltaic (PV) systems
- Implemented an Ethereum-based payment system utilizing ERC-20 tokens for secure and efficient transactions
- Ensured transaction transparency and immutability by recording all exchanges on the blockchain
- Conducted research on optimizing blockchain networks for renewable energy transactions between consumers and prosumers (Sponsored by NV Energy)

Mission Support & Test Services, LLC (MSTS) — North Las Vegas, NV
Scientist, Data Analytics/Machine Learning (Casual) — May 2023 – Sep 2024

- Researched on Unsupervised learning (Autoencoder, Deep Embedded Learning) and Semi-supervised learning method on an NNSS Seismic dataset

Mission Support & Test Services, LLC (MSTS) — North Las Vegas, NV
Intern — Jan 2023 – May 2023

- Developed Unsupervised Learning (Expectation Maximization) algorithm on an NNSS dataset

TEACHIING EXPERIENCE

University of Nevada, Las Vegas Las Vegas, NV

Teaching Assistant, Department of Computer Science Jun 2019 – Jan 2021

- Teaching, running the labs, and administered grades in the following classes. These classes are in the Master of Computer Science- Cyber Security tracks
    - CS 789 AI/ML Methods for Cybersecurity: Fall 2024
    - CS 465 Network: Fall 2019,2020
    - CS 445/645 Internet Security Spring: 2020,2022, Fall 2020
    - CS 448/648 Computer Security: Fall 2020
    - CS 443/643 Information Assurance: Fall 2021,2022, Summer 2021,2022
    - CS 789 Fundamentals of Blockchain: Spring 2020

University of Nevada, Las Vegas Las Vegas, NV

Teaching Assistant, GenCyber Summer camp Jun 2019 – Jun 2024

- Served as a Teaching Assistant at Gen Cyber Camp, sponsored by NSA and NSF
- Running the labs, Prepare class, setup class

Boston Academy Los Angeles, CA

Tutor May 2018 – Jun 2020

- Developed and delivered Math curricula for K-12 students and AP Computer Science classes
- Conducted engaging and interactive online lessons tailored to individual student needs

Westmont College Santa Barbara, CA

Teaching Assistant, Department of Computer Science Jan 2018 – May 2018

- Running TA hours for freshman and sophomore classes

WORK EXPERIENCE

Decentre Labs Las Vegas, NV

Blockchain software developer Aug 2022 – May 2023

- Designed and implemented a decentralized real estate auction system using Ethereum smart contracts, integrating ERC-721 tokens for property representation
- Optimized smart contract efficiency to minimize gas fees and enhance the user experience
- Deployed the smart contract on the Polygon mainnet for improved scalability and lower transaction costs
- Developed a blockchain-based reward system utilizing Ethereum and ERC-20 tokens for incentivizing user participation
- Created a smart contract to issue and manage custom tokens for task-based rewards
- Built a web-based interface for users to earn, track, and redeem tokens seamlessly

City Ledger Las Vegas, NV

Blockchain software developer May 2022 – Aug 2022

- Developed a blockchain-based real estate auction system using Ethereum's ERC-721 NFTs, enabling secure ownership transfer
- Created a blockchain-powered mobile application to track user activities in hotels and provide personalized coupon rewards

- Designed and deployed smart contracts to manage and distribute customized incentives based on user behavior and preferences

Alton USA Torrance, CA
Web Developer Intern May 2016 – Aug 2016

- Designed and developed the company's official website
- Edited and integrated videos into the website to enhance visual appeal and user engagement
- Conducted testing and debugging to ensure the website's functionality and performance across various devices and browsers

JOURNAL PUBLICATION

1. A. Hoffman, P. Austria, **C. H. Park,** and Yoohwan Kim, "*Bountychain: Toward Decentralizing a Bug Bounty Program with Blockchain and IPFS*." International Journal of Networked and Distributed Computing, vol. 9, 2021, pp. 86-93.

CONFERENCE PUBLICATIONS

1. **C. H. Park**, Yoohwan Kim, and Ju-Yeon Jo, "*Anonymous Cyber Threat Intelligence Sharing on Blockchain with ZKP and Ring signature*" (in preparation) IEEE SVCC, San Francisco, USA, June, 2025
2. M. Buslon, **C. H. Park**, Yoohwan Kim, and Ju-Yeon Jo, "*Attack Target Detection Using Machine Learning on SCADA Gas Pipeline Data*" 2023 International Conference on Computational Science and Computational Intelligence (CSCI), Las Vegas, NV, USA
3. **C. H. Park**, Ju-Yeon Jo, and Yoohwan Kim, *"Detecting Cyber Threats with Limited Dataset Using Generative Adversarial Network on SCADA System"* 2023 International Conference on Computational Science and Computational Intelligence (CSCI), Las Vegas, NV, USA
4. **C. H. Park**, P. Austria, Yoohwan Kim, and Ju-Yeon Jo, *"MPTCP Performance Simulation in Multiple LEO Satellite Environment"* 2022 IEEE 12th Annual Computing and Communication Workshop and Conference (CCWC), Las Vegas, NV, USA
5. P. Austria, **C. H. Park**, Ju-Yeon Jo, Yoohwan Kim, R. Sundaresan, and K. Pham, *"BBR Congestion Control Analysis with Multipath TCP (MPTCP) and Asymmetrical Latency Subflow"* 2022 IEEE 12th Annual Computing and Communication Workshop and Conference (CCWC), Las Vegas, NV, USA
6. P. Austria, **C. H. Park**, A. Hoffman, and Yoohwan Kim, *"Performance and Cost Analysis of Sia, a Blockchain-Based Storage Platform"* 2021 IEEE/ACIS 6th International Conference on Big Data, Cloud Computing, and Data Science (BCD), Zhuhai, China
7. B. Cisneros, J. Ye, **C. H. Park,** and Yoohwan Kim, *"CoviReader: Using IOTA and QR Code Technology to Control Epidemic Diseases across the US"* 2021 IEEE 11th Annual Computing and Communication Workshop and Conference (CCWC), Las Vegas, NV, USA
8. **C. H. Park**, Yoohwan Kim, and Ju-Yeon Jo, *"A Secure Communication method for CANBus"* 2021 IEEE 11th Computing And Communications Workshop and Conference (CCWC), Virtual
9. **C. H. Park**, I. Mejia Barlongo, and Yoohwan Kim, *"A Market Place Solution for Energy Transaction on Ethereum Blockchain"* 2019 IEEE 10th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), Vancouver, BC, Canada

BOOK CHAPTER

1. **C. H. Park**, M. Buslon, Ju-Yeon Jo, and Yoohwan Kim, "*Efficient Cyber Threat Detection on SCADA Systems Using Feature-Grouped Generative Adversarial Networks*" Cybersecurity - Cyber Defense, Privacy and Cyberwarfare" (ISBN: 978-3-11-143641-8), In Press (accepted for publication), 2025, Vol.12
2. **C. H. Park**, G. Chmaj, and H. Selvaraj, "*Blockchain-Based Smart Contracts Use for Photovoltaic Energy Trade Transactions*" Advances in Systems Engineering, 2021 (ISBN: 978-3-030-92603-8), pp. 165–174

PRESENTATIONS

1. "*Anonymous Cyber Threat Intelligence Sharing on Blockchain with ZKP and Ring signature*", Poster Presentation at Graduate Symposium: College of Engineering UNLV, Las Vegas NV, Mar 2025
2. "*Cyber Threat Intelligence Sharing with Blockchain and Decentralized Anonymous Identity: Focusing on Zero-Knowledge Proofs*", Poster Presentation at Graduate Symposium: College of Engineering UNLV, Las Vegas NV, Mar 2024
3. "*Crypto Wallet Report: Secure Your Wallet*", Poster Presentation at Graduate Symposium: College of Engineering UNLV, Las Vegas NV, Mar 2023
4. "*A Market Place Solution for Energy Transaction on Ethereum Blockchain*", Poster Presentation at Korean American Scientist and Engineers Association (KOSEA), Atlanta, GA, Nov 2021
5. "*Decentralized Energy Transaction for Renewable Energy*", Presentation at UNLV Blockchain Day, Las Vegas, NV, May 2019
6. "*Home Security System with IoT System*", Poster Presentation at Senior Seminar Westmont College, Santa Barbara, CA, April 2018

INVITED LECTURES

1. CS 789 - Topics in Advanced Computer Science: Blockchain (Fall 2023) "Decentralized Identification" – University of Nevada, Las Vegas
2. GenCyber (Summer 2019, 2020, 2021): "Crypto Wallet and Token management" - University of Nevada, Las Vegas

HONORS & AWARDS

1. Best Paper Award, IEEE CCWC: "*CoviReader: Using IOTA and QR Code Technology to Control Epidemic Diseases Across the US*", Las Vegas, NV 2021
2. Best Presenter Award, IEEE CCWC: "*A Secure Communication Method for CANBUS*", Las Vegas, NV 2021

ACADEMIC REVIEW CONTRIBUTION

1. Scientific Reports Springer Nature Jan 2025
2. International Journal of Networked and Distributed Computing Feb 2023
3. International Journal of Networked and Distributed Computing Sep 2022

4. MDPI in the 2nd International Electronic Conference on Applied Sciences Jan 2022
5. IEEE Transactions on Vehicular Technology Sep 2020

SCHOLARSHIP & FELLOWSHIPS

1. Harold & Mayme Stocker Scholarships, ($20,000), UNLV College of Engineering 2024
2. UNLV Scholarship, NSA NCAE-C ($10,000), UNLV Dept. of Computer Science 2023
3. UNLV Scholarship, DOE MSIPP ($7,500), UNLV Dept. of Computer Science 2021
4. UNLV Scholarship, AANAPISI Support Grant ($100), UNLV Graduate College 2020

LAB EXPERIENCE

Lab Manager (Cyber Security Lab, SEB 3261) 2019-Current

- Managed the lab's primary high-performance computing system used for machine learning research:
    - Operating System: Ubuntu 20.04 with Lambda Stack for efficient management of TensorFlow, PyTorch, CUDA, cuDNN, and other machine learning libraries
    - Processor: AMD Threadripper 3960X with 24 cores, 3.80 GHz, 128 MB cache, and PCIe 4.0 support
    - GPUs: 3x NVIDIA RTX 3090 for high-performance parallel processing
    - Memory: 256 GB RAM for handling large datasets
    - Storage: 1 TB SSD (NVMe) for rapid data access and processing
- Oversaw hardware and software installation, maintenance, and troubleshooting, ensuring uninterrupted operation for research activities
- Administered user accounts and access control for students and researchers, enabling secure and efficient use of computational resources
- Supported the lab's machine learning projects by maintaining optimal system performance and managing the installation of required libraries and dependencies
- Provided comprehensive support for lab facilities, including managing everyday equipment such as coffee machines, printers, and network devices to ensure a functional and comfortable environment

Mentor for MS and new Ph.D. Students 2022-Current

- Advised master’s and early-stage Ph.D. students on research methodologies, technical skills, and project management to support their academic and professional growth
- Facilitated collaborative research environments by fostering communication between team members and ensuring alignment with project goals
- Directed and supervised research projects focused on SCADA (Supervisory Control and Data Acquisition) system security, emphasizing machine learning and blockchain applications
- Managed project timelines facilitated collaboration among team members and reviewed technical content to align with research objectives
- resulted in 3 collaborative publications

ACADEMIC PROJECTS

Smart Greenhouse with AI-Driven Watering System
Undergraduate research, Westmont College, May 2017

- Deployed a sensor board integrated with a Raspberry Pi running Python in a smart greenhouse
- Collected environmental data to train an artificial intelligence system for automated watering using the Weka API and Java
- Improved irrigation efficiency by utilizing data-driven insights to optimize water usage

VEX Robotics Competition – Lead Programmer for Team of 5
California State University, Northridge, Nov 2015

- Designed and programmed a robot capable of grabbing a ball and shooting it into a net, simulating basketball-like behavior
- Utilized RobotC programming language to implement precise power and angle calculations for accurate shots
- Led the programming efforts for the team, ensuring the robot performed consistently under competition conditions

Raspberry Pi Security System
Undergraduate Senior Project, Westmont College, May 2017

- Engineered a comprehensive security system using a Raspberry Pi with a camera, vibration sensor, speaker, light sensor, and flashlight
- Programmed the system to detect vibrations, capture images, and send notifications via email and text message
- Enhanced functionality by collecting and analyzing MAC addresses from nearby Wi-Fi devices to detect suspicious activity