

## SKILLS

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<b>Tools and technologies</b>	Python, SQL, C, MATLAB, Assembly Language, Bash Scripting, Linux, Docker, Power BI, Seaborn, R Programming Language, scikit-learn, Numpy, Pandas, Scipy, TensorFlow, Keras, PyTorch, Matplotlib, Selenium, Git, LaTeX Typesetting, AutoCAD, SolidWorks, ANSYS, OriginLab, Database, Data Mining, Distributed Network Operating Systems, SQL, XML, Bootstrap, Hibernate, NoSQL, MongoDB, JSON, Content Delivery Network (CDN), Apache Web Server, Amazon Web Services (AWS), Microsoft Azure, RIPE Atlas, Google Cloud, Cloudflare, Amazon CloudFront, Microsoft SQL server, Flask, Django, Spark, FastAPI, Azure DevOps, CI/CD, Folium, ArcGIS, Spring Framework, Kafka
<b>Industry Knowledge</b>	Machine Learning, Artificial Intelligence (AI), Data Science, Deep Learning, Big Data, Statistics, Cybersecurity, Network Security, Data Analysis, Computer Networking, Cloud Computing, REST API, GraphQL, API design, Agile, Scrum, Test automation

## EXPERIENCE

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**Data Scientist** **Dec 2022 — Current**  
Expatriate Communications Pasadena, CA

- Streamlined data management operations by devising automation programs for data downloading, cleaning, processing, and prediction
- Pioneered a school matching program to empower parents in making informed school selections
- Innovated an IEP compliance projection program, enabling educators to effectively track and enhance student progress
- Engineered a student service projection program, bolstering service providers' ability to monitor delivery outcomes
- Addressed a critical operational challenge by devising a program to track missing students in the roster
- Leveraged data mining technologies for automated data extraction from diverse sources, enhancing data availability and accuracy
- Seamlessly assumed responsibilities of the outgoing data scientist, ensuring continuity and timely project delivery
- Optimized data prediction models and rectified PowerBI dashboards using advanced machine learning techniques, improving data visualization and insight generation
- Fostered a supportive work environment through the provision of technical support and training to a new team member, facilitating their quick integration
- Demonstrated adaptability by successfully taking on diverse roles and responsibilities within the organization

**Teaching Assistant/Lecturer** **Sep 2016 — Dec 2022**  
University of Delaware, ECE and CS Department Newark, DE

**Research Assistant/Project Leader** **Sep 2015 — Dec 2022**  
University of Delaware Newark, DE

**Project Leader: Detect and Analyze Vulnerable Transparent Proxies** **Jul 2020 — Dec 2022**  
University of Delaware, Collaborate with ODU and Virginia Tech Newark, DE

- Develop a new method to identify steady transparent proxies
- Characterize of transparent proxies from various aspects
- Identify security problems among transparent proxies including cache poisoning and CPDoS attacks
- Tools: Python, Bash, API, HTTP, ProxyRack

**Project Leader: Understanding Open Proxy Ecosystem** **Jan 2019 — Jul 2020**  
University of Delaware, Collaborate with ODU and Virginia Tech Newark, DE

- Conduct the largest-scale study on over 436,000 identified proxies, including 104,000 responsive proxies in 9 months
- Identify that 7.17% of responsive proxies modify the page content, and 76.42% of those content modifying proxies perform malicious actions
- Perform the first analysis two particular groups of open proxies—cloud-based proxies and long-term proxies
- Tools: Python, Bash, Web crawler, API, HTML, Ping, TraceRoute, Curl

**Project Leader: Passive Analysis of Anycast in Global Routing: Unintended Impact of Remote Peering** **Jul 2017 — Jan 2019**  
University of Delaware, Collaborate with UCSD CAIDA Newark, DE

- Invent an alternative approach to characterize anycast based on previously collected global BGP routing information and achieved 90% accuracy in detecting anycast prefixes
- Prove that anycast routing has been entangled with the increased adoption of remote peering and observed that at least 19.2% of anycast prefixes have been potentially impacted
- Tools: Python, Bash, BGP, RIPE Atlas, RouteViews, BGPStream, machine learning, routing, TraceRoute, Ping

<b>Project Leader: Revisiting the Cloud Network Management on Amazon EC2</b> University of Delaware	<b>Sep 2015 — Dec 2015</b> Newark, DE
<ul style="list-style-type: none"> <li>• Study on Amazon AWS EC2 to explore how the instances communicate within EC2 and with the internet outside the EC2</li> <li>• Confirm that Amazon EC2 enhanced security management including hiding routing information, isolating DNS servers and set VPC as default configurations</li> <li>• Tools: Python, AWS, Bash, Nmap, Zmap, Ping, TraceRoute, Microsoft Office</li> </ul>	
<b>Software Engineer Intern</b> EPS Online INC	<b>June 2021 — Sep 2021</b> Newark, DE
<ul style="list-style-type: none"> <li>• Build an Inventory Management Software by Python and MySQL</li> <li>• Enhance the efficiency and security of software and deploy this Software in AWS</li> <li>• Tools: Python, AWS, Bash, MySQL</li> </ul>	
<b>Project Leader: Ultralong Focal Length Microlens array Fabricated Based on SU-8 Photoresist</b> University of Science and Technology of China	<b>Sep 2012 — Jun 2015</b> Hefei, Anhui, China
<ul style="list-style-type: none"> <li>• Propose a novel method to fabricate ultralong focal length microlens arrays based on SU-8 photoresist</li> <li>• Study and Validate the formation mechanism by simulation based on the Finite Element Method</li> <li>• Publish a patent and paper</li> <li>• Tools: Matlab, C, ANSYS, Surface Evolver, Finite element Method, Photolithography, OriginLab</li> </ul>	
<b>Project: Reconstruction of Limited-angle and Few-view Nano-CT Image via TV Iterative Reconstruction</b> University of Science and Technology of China	<b>Sep 2011 — Sep 2013</b> Hefei, Anhui, China
<ul style="list-style-type: none"> <li>• Acquire nano-CT images with high quality by using conventional Fourier reconstruction methods based on limited-angle or few-view projections and utilize the total variation (TV) iterative reconstruction to carry out numerical images and nano-CT image reconstruction with limited-angle and few-view data</li> <li>• Tools: Matlab, C, OriginLab, Image Processing, Microsoft Office</li> </ul>	
<b>Project Leader: Research of CT reconstruction FBP Algorithm based on Compressive Sensing</b> University of Science and Technology of China	<b>Sep 2011 — Sep 2012</b> Hefei, Anhui, China
<ul style="list-style-type: none"> <li>• Utilize Compressing Sensing technology to enhance CT reconstruction Filtered Back-Projection (FBP) Algorithm</li> <li>• Tools: Matlab, C, OriginLab, Image Processing, Compressive sensing, Microsoft Office</li> </ul>	
<b>Intern</b> Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences	<b>Jul 2011 — Sep 2011</b> Changchun, Jilin, China

## PUBLICATIONS

1. Bian, R. *et al.* Silent Observers Make a Difference: A Large-scale Analysis of Transparent Middlebox in the Internet. *Under review.*
2. Bian, R. *et al.* Shining a light on dark places: A comprehensive analysis of open proxy ecosystem. *Computer Networks* (2022).
3. Bian, R. *et al.* Towards passive analysis of anycast in global routing: Unintended impact of remote peering. *ACM SIGCOMM CCR* (2019).
4. Bian, R. *et al.* Ultralong focal length microlens array fabricated based on SU-8 photoresist. *Applied optics*, 5088–5093 (2015).
5. Liu, G. *et al.* Manufacturing method of micro lens CN104,614,936 A. 2015.
6. Liang, Z. *et al.* Reconstruction of limited-angle and few-view nano-CT image via total variation iterative reconstruction in X-Ray Nanoimaging: *Instruments and Methods* (2013), 885113.

## EDUCATION

<b>Ph.D. in Computer System and Networking</b> , Department of Electrical and Computer Engineering University of Delaware, Advisors: Dr. Haining Wang and Dr. Chase Cotton	<b>Sep 2015 — Dec 2022</b>
<b>M.S. in Techniques and Applications of Synchrotron Radiation</b> , National Synchrotron Radiation Laboratory University of Science and Technology of China (USTC), Advisors: Dr. Yangchao Tian and Dr. Gang Liu	<b>Sep 2012 — Jun 2015</b>
<b>B.E. in Mechanical Engineering and Automation</b> , Department of Precise Machinery and Precise and Instrumentation University of Science and Technology of China (USTC)	<b>Sep 2008 — Jun 2012</b>

## AWARDS AND OTHER EXPERIENCES

<b>2020</b>	Teaching Assistant of U.S. Cyber Challenge(USCC) Delaware Summer Camp
<b>2017</b>	SANS CyberStart 2017 Scholarship, Ranking of <b>44 out of 3,935 people</b>
<b>2016</b>	Graduate student group leader of University Of Delaware Chinese Christian Fellowship
<b>2014</b>	Teaching Assistant of Hezhan elementary school of Ulanhot
<b>2010</b>	Outstanding Student Scholarship of University of Science and Technology of China
<b>2009</b>	Minister of Interview Division in Student Journalists Association
<b>2008</b>	Outstanding Freshman Scholarship of University of Science and Technology of China
<b>2008</b>	The top scorer( <b>1/10000+</b> ) in National University Entrance Examinations in The Hinggan Area