Efrén López Morales

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🌐 efrenlopez.org

Education

2021–Present	**Ph.D. in Geospatial Computer Science**, *Texas A&M University-Corpus Christi*
	Advisor: Carlos Rubio-Medrano
2018–2020	**Master's Degree in Computer Science**, *Arizona State University*
	Advisors: Gail-Joon Ahn, Adam Doupé, and Carlos Rubio-Medrano
	Thesis: HoneyPLC: A Next-generation Honeypot for Industrial Control Systems
2009–2012	**Bachelor's Degree in Computer Networks**, *Universidad Autónoma de Guadalajara*
	Highest Honors

Publications

Efrén López Morales, Carlos E. Rubio-Medrano, Adam Doupé, Yan Shoshitaishvili, Ruoyu Wang, Tiffany Bao, and Gail-Joon Ahn, "HoneyPLC: A Next-generation Honeypot for Industrial Control Systems," *In: Bao, T., Tambe, M., Wang, C. (eds) Cyber Deception. Advances in Information Security, vol 89. Springer, Cham*, October, 2022.

Efrén López Morales, Carlos E. Rubio-Medrano, Adam Doupé, Yan Shoshitaishvili, Ruoyu Wang, Tiffany Bao, and Gail-Joon Ahn, "HoneyPLC: A Next-generation Honeypot for Industrial Control Systems," *In Proceedings of the 2020 ACM SIGSAC Conference on Computer and Communications Security 2020*, Online, November 2020.

Research Experience

Feb-May 2023	**Research Internship**, *CISPA Helmholtz Center for Information Security*, Holz Research Group
	Advisors: Ali Abbasi and Thorsten Holz
Jul 2022	**Visiting Researcher**, *University of California Santa Cruz*, Cy-Phy Security Lab
	Advisor: Álvaro Cárdenas
2021-Present	**Graduate Research Assistant**, *Texas A&M University-Corpus Christi*, CSRIL Security Lab
	Advisor: Carlos Rubio-Medrano
2019–2020	**Graduate Research Assistant**, *Arizona State University*, SEFCOM Laboratory
	Advisor: Adam Doupé and Carlos Rubio-Medrano

Honors & Awards

Jun 2023	**Islander Leadership Scholarship**, Texas A&M University-Corpus Christi
Aug 2022	**Conference Travel Award (In-Person)**, Great Minds in STEM Conference (Pasadena, CA)
May 2022	**Student Travel Award**, 43rd IEEE Symposium on Security and Privacy (San Francisco, CA)
Apr 2022	**1st Place Winner in 3MT Thesis Competition**, Texas A&M University-Corpus Christi
Mar 2022	**Overleaf Advisor**, The Overleaf Advisor Programme
Nov 2021	**iMentor Workshop Mentee**, ACM Conference on Computer and Communications Security
Oct 2021	**1st Place in Graduate Computing Poster Competition**, Great Minds in STEM Conference
Apr 2021	**SAGE Fellowship**, Texas A&M University-Corpus Christi
Aug 2020	**Conference Diversity Grant (Virtual)**, USENIX Security Symposium (USENIX)
2020	**Outstanding Mentor Award**, Arizona State University
2018	**Fulbright-García Robles Scholarship**, Fulbright COMEXUS
2012	**Academic Excellence Scholarship**, Universidad Autónoma de Guadalajara

Talks and Presentations

Apr 2023   **Design of a Satellite Honeypot**, *Poster Presentation at Innovation Corner*, CySat (Paris, France)

Oct 2022   **Exploiting and Securing Programmable Logic Controllers**, *Graduate Computing Poster Competition*, GMiS Conference (Pasadena, CA)

Apr 2022   **Exploiting and Securing Programmable Logic Controllers**, *Spring Student Research Symposium Poster Presentation*, Texas A&M University-Corpus Christi

Apr 2022   **Overleaf Typesetting Workshop**, *Spring Student Research Symposium*, Texas A&M University-Corpus Christi

Apr 2022   **Exploiting and Securing Programmable Logic Controllers**, *3MT Thesis Competition*, Texas A&M University-Corpus Christi

Mar 2022   **Ciberseguridad: Habilidades y Oportunidades**, *Guest Speaker*, Universidad de la Sierra Juárez, Mexico

Mar 2022   **Exploiting and Securing Programmable Logic Controllers**, *Lightning Talks Competition*, 17th Texas A&M University System Pathways Student Research Symposium (College Station, TX)

2021   **HoneyPLC: A Next-generation Honeypot for Industrial Control Systems**, *Graduate Computing Poster Competition*, GMiS Conference

2020   **HoneyPLC: A Next-generation Honeypot for Industrial Control Systems**, *In Proceedings of the 2020 ACM SIGSAC Conference on Computer and Communications Security 2020*, CCS 2020

Service

Jan 2023   **Journal Reviewer**, *IEEE Transactions on Dependable and Secure Computing*

Teaching Experience

Fall 2023   **Instructor of Record (16 Students)**, *COSC-4367 Firewalls and Intrusion Detection Systems*
Texas A&M University-Corpus Christi

Fall 2018 - Spring 2019   **Teaching Assistant (4 Labs, 100 Students)**, *CSE110 Principles of Programming with Java*
Arizona State University

Leadership Experience

2022-Present   **Mentor**, *Future GRADS MentorSHPE Program*, Society of Hispanic Professional Engineers (SHPE) National

2021-Present   **President**, *Geospatial Computer Science Graduate Student Organization (GSCGSO)*, Texas A&M University-Corpus Christi

2021-Present   **Treasurer**, *Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)*, Texas A&M University-Corpus Christi

2019-2020   **President**, *Fulbright International Student Association*, Arizona State University

Industry Experience

2020–2021   **Network Support Engineer**, *Cisco Meraki*, Diagnosed and troubleshooted routing and switching, wireless, security, SD-WAN and firewall Meraki products and technologies using the Meraki Dashboard, Wireshark and Knowledge Base articles

2016–2018   **Network Engineer**, *Telmex*, Configure and troubleshoot L3 and L2 technologies: MPLS, BGP, EIGRP, OSPF, QoS, VRFs, STP, PoE

2014–2016   **Systems Engineer**, *Tata Consultancy Services*, Troubleshooted networking, Windows Server and Active Directory technologies

2013   **Systems Engineer**, *Universidad Autónoma de Guadalajara*, Performed as Webmaster and administrator of DNS and Web servers

2012   **Junior Network Engineer**, *Pemex*, Configured Cisco, Nortel, Extreme enterprise switches and routers

Corpus Christi, Texas, September 4, 2023.

Dear Student Travel Grant Committee,

I take immense pleasure in writing this letter of recommendation for Efrén López Morales to support his application to the Student Travel Grant at IEEE SecDev 2023. I have served as Efrén's advisor for the last four years, first as an MS Student at Arizona State University (ASU), and currently as a PhD Student at Texas A&M University- Corpus Christi (TAMU-CC), where he was awarded the prestigious Scholar Achievement in Graduate Education (SAGE) Scholarship to fund his doctoral students focused on Cyber-Physical Systems (CPS) and Cybersecurity.

During this time, I witnessed how Efrén developed a series of skills that make him an excellent candidate for your grant: first, he was able identify the most pressing research topics in the field of Cybersecurity for Energy Delivery Systems, e.g., the Power Grid and the Gas and Oil industries. Second, as a result of his hard work, not only he completed an excellent MS thesis, but he also authored a paper accepted at the ACM Computer and Communications Security (CCS' 20) Conference, and was also awarded the First Place at the Graduate Poster Student Competition in the 2021 GMiS Conference. Third, during the Spring 2023 semester, Efrén was appointed to a highly-competitive internship position semester at the German CISPA Helmholtz Center for Information Security, one of the top research centers in Cybersecurity worldwide. Overall, I believe that attending the many interesting presentations at IEEE SecDev 2023 will be indeed beneficial for him. In addition, being graduate student, his assistance can be beneficial to other participants of the conference, as he may be able to reflect the perspectives of junior researchers.

At the moment, Efrén does not have any other travel support nor personal funds to attend the conference, so I am convinced he is an excellent candidate for receiving your travel grant. Please feel free to contact me in case any questions arise.

Sincerely,

Carlos E. Rubio-Medrano, PhD.
Assistant Professor, Computer Science
Texas A&M University – Corpus Christi
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http://carlosrubiomedrano.com
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Research Statement

My name is Efren Lopez, I am a third year PhD Computer Science student at Texas A&M University-CC. My research interests are Cyber-Physical Systems security and Security of Satellites. Specifically, I am interested in the security of programmable logic controllers, CPS network protocols and satellite firmware security. My research focuses on the security of devices used in real-world operations like electric grid. My last publication: HoneyPLC: A Next-Generation Honeypot for Industrial Control Systems was accepted to CCS 2020. It introduced a new honeypot that collects relevant interaction data and malware samples. I am currently working on a research project where we want to use security techniques and apply them to satellite firmware. For example, fuzzing and reverse engineering of satellite firmware.

I wish to attend the IEEE Secure Development Conference because its focus on how to develop secure systems and the real-world impact of security aligns quite nicely with my research interests. On top of that I wish to meet and discuss research ideas with the conference attendees and also with the members of the conference committee such as Dr. Tuba Yavuz, Dr. Ruimin Sun and Dr. Daphne Yao. Their research is amazing and I have often read it and referenced in my research. Topic-wise I am interested in attending paper presentations regarding Security/resiliency-focused system designs and Comparative experimental Evaluations.
This conference brings together researchers from different fields like AppSec, CCS and USENIX Security and Industrial conferences. This makes IEEE SecDev a quite unique conference and I would to take advantage of this unique opportunity and learn from top researchers while I pursue my PhD.

In closing, I am looking forward to attending IEEE DevSec for the first time and I am really excited to apply for this travel grant. If awarded I will make the most out of this opportunity.

Thank you for your time and consideration.