

Open-source enthusiast and hacker specializing in web technology and Linux-based systems. A WebKit and GNOME project contributor. 8 years of industry and 6 years of academic experience. Looking for opportunities in the Web browser, Emerging Web Technologies, Browser Security, Web Security & Privacy, Kernel, and Computer Graphics.

**Skills** WebKit, Blink/Chromium, GNOME, Linux, C/C++, Python, HTML/CSS/Javascript, Objective-C, Java, OpenGL/OpenGL ES, Clutter, Computer Graphics, GTK+, eBPF, BCC, Ethereum, Git, OBS, Clang, LLVM, GStreamer, Tizen, Linux Perf, Bluetooth LE, ReactJS, React Native, Embedded system, Puppeteer

## Education

08/2017 - 12/2022	<b>Ph.D. student (ABD)</b> in Computer Science, <b>Georgia Institute of Technology, U.S.A.</b>
08/2017 - 12/2022	<b>Dual M.S.</b> in Computer Science and Cybersecurity, <b>Georgia Institute of Technology, U.S.A.</b>
03/2000 - 06/2008	<b>Dual B.E.</b> in Digital Media and Computer Engineering, <b>Ajou University, South Korea</b>

## Professional Experience

06/2019 - present	<b>Intern at Igalia, S.L.</b> in A Coruña, Spain <ul style="list-style-type: none"><li>• Bring ANGLE backend for WebGL to WebKitGTK</li><li>• Zero copy texture sharing between Mesa and ANGLE via Linux DMA buffer</li><li>• Research Text-To-Speech technologies to employ for WebKitGTK</li></ul>
05/2020 - 08/2020	<b>Intern at Samsung Research America</b> in Mountain View, CA
05/2019 - 08/2019	<ul style="list-style-type: none"><li>• Build a web app for health data analysis with ReactJS (frontend) and Node.js (backend)</li><li>• Built an automated system verifying the UI of a watch app by using the Tizen automation framework</li><li>• Profiled memory usage and revealed possible memory leak of a watch app by using Valgrind</li><li>• Implemented file transfer via Bluetooth LE in a React Native watch application</li></ul>
08/2012 - 03/2016	<b>Software engineer at Collabora Ltd.</b> in Cambridge, UK <ul style="list-style-type: none"><li>• Developed hardware-based compositing based on Clutter in WebKit</li><li>• Resource-efficient web browser based on GNOME Epiphany for Raspberry Pi 2+</li><li>• Customized WebKit features and API set for Smart TV Alliance SDK</li></ul>
07/2008 - 08/2012	<b>Assistant Software engineer at Samsung Electronics</b> in Suwon, South Korea <ul style="list-style-type: none"><li>• Developed an in-house web layout engine for Smart TVs, Printers in C++</li><li>• Implemented WebGL and Accelerated Compositing in WebKit EFL by using OpenGL ES for Tizen</li></ul>
07/2007 - 06/2008	<b>Intern at Samsung Software Membership</b> in Suwon, South Korea <ul style="list-style-type: none"><li>• Developed a 3D racing game using DirectX on Windows (<a href="#">video</a>)</li></ul>

## Academic Experience

05/2021 - 08/2021	<b>Research Intern at Tandon School of Engineering, New York University</b> <ul style="list-style-type: none"><li>• Research an online ad privacy issue with <a href="#">Prof. Damon McCoy</a></li></ul>
08/2019 - 05/2021	<b>Teaching Assistant at School of Computer Science, Georgia Tech</b> <ul style="list-style-type: none"><li>• CS 6262: Network Security, Design and Implement the XSS task using node.js and Chrome Extension</li><li>• CS 6035: Intro to InfoSec</li></ul>
08/2017 - present	<b>Research Assistant at School of Computer Science, Georgia Tech</b> <ul style="list-style-type: none"><li>• Study privacy leakage in online ads</li><li>• Redesign chromium to block user tracking by web browser fingerprints</li><li>• Debloat chrome browser with feature sunsetting on the fly by binary rewriting</li><li>• Developed a defense system against micro DDoS by profiling resources with HPC (Intel PCM, MBM)</li><li>• Implemented an idle profiler that diagnoses off-CPU time in the multi-threaded programs using HPC</li></ul>

## Open Source Projects

04/2013 - present	<b>Committer at WebKit</b> ( <a href="#">patches</a> ) <ul style="list-style-type: none"><li>• Implement several web features for WebKitGTK (e.g., Form validation, Gamepad API with libmanette, AVIF support with dav1d, Web Speech with Flite, etc)</li><li>• Implement OpenGL ES backend for Accelerated Compositing.</li><li>• Developed memory pressure handler that copes with out-of-memory on top of Linux cgroup.</li><li>• Enhance WebGL support and Fix layout and rendering issues</li><li>• Fix CVE security bugs in WebKit (<a href="#">CVE-2020-10018</a>, <a href="#">CVE-2020-11793</a>)</li></ul>
10/2013 - present	<b>Member at GNOME Foundation</b> ( <a href="#">patches</a> ) <ul style="list-style-type: none"><li>• Translate GNOME Web and its Help document in Korean</li></ul>
01/2015 - present	<b>Contributor at Chromium/Blink</b> ( <a href="#">patches</a> ) <ul style="list-style-type: none"><li>• Implemented a CSS spec called font-size-adjust</li><li>• Fix layout and rendering issues in Blink</li></ul>

## Publications

ACSAC 2022	<a href="#">DeView: Confining Progressive Web Applications by Debloating Web APIs (paper)</a>
ACM CCS 2022	<a href="#">Cart-ology: Intercepting Targeted Advertising via Ad Network Identity Entanglement (paper)</a>
ACM CCS 2020	<a href="#">Slimium: Debloating the Chromium Browser with Feature Subsetting (paper)</a>
arXiv:2205.00056	<a href="#">Mitigating Low-volume DoS Attacks with Data-driven Resource Accounting (paper)</a>
<b>Patents</b>	
US 20110296323	Web page management method and apparatus and storage medium thereof
US 20110289110	Method of re-searching webpage and apparatus and storage medium therefor
US 20110093606	Interface method and display device
US 20110090165	Interface method and display device
<b>Talks</b>	
12/09/2022	ACSAC 2022 in Austin, TX, U.S.A. ( <a href="#">slides</a> )
11/09/2022	ACM CCS 2022 in Los Angeles, CA, U.S.A. ( <a href="#">slides</a> )
12/07/2014	Web Engines Hackfest 2014 in A Coruña, Spain ( <a href="#">slides</a> )
09/29/2014	DEVIEW 2014 in Seoul, South Korea ( <a href="#">slides</a> , <a href="#">video</a> )
04/25/2014	Jeju University in Jeju, South Korea ( <a href="#">slides</a> )
10/27/2013	DevOn 2013 in Seoul, South Korea ( <a href="#">slides</a> )
<b>Service</b>	
10/2021	<a href="#">Mentoring student participants in the Open-source SW Developer Competition, South Korea</a>

*Last updated: 12/09/2022*