

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

Professional Experience

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

Academic Experience

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

Open Source Projects

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

Publications

ACSAC 2022	DeView: Confining Progressive Web Applications by Debloating Web APIs (To Appear)
ACM CCS 2022	Cart-ology: Intercepting Targeted Advertising via Ad Network Identity Entanglement (paper)
ACM CCS 2020	Slimium: Debloating the Chromium Browser with Feature Subsetting (paper)
arXiv:2205.00056	Mitigating Low-volume DoS Attacks with Data-driven Resource Accounting (paper)
Patents	
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
Talks	
11/09/2022	ACM CCS 2022 in Los Angeles, CA, U.S.A. (slides)
12/07/2014	Web Engines Hackfest 2014 in A Coruña, Spain (slides)
09/29/2014	DEVIEW 2014 in Seoul, South Korea (slides , video)
04/25/2014	Jeju University in Jeju, South Korea (slides)
10/27/2013	DevOn 2013 in Seoul, South Korea (slides)
Service	
10/2021	Mentoring student participants in the Open-source SW Developer Competition, South Korea

Last updated: 11/09/2022