

Open-source hacker and security researcher specializing in web and computer systems. A WebKit, Chromium, and GNOME project contributor. 9 years of industry and 7 years of academic experience. Looking for opportunities in the Web browser, Emerging Web, Browser Security, Web Security & Privacy, 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

01/2023 - Present	Sr. Software Engineer at ByteDance/TikTok Ltd. in Mountain View, CA <ul style="list-style-type: none">Working on the Web PlatformWeb Standardization at the W3C Working Groups: CSS, Performance, WebApp Sec, and Privacy
06/2019 - 12/2022	Intern at Igalia, S.L. in A Coruña, Spain (cert.) <ul style="list-style-type: none">Bring ANGLE backend for WebGL to WebKitGTKZero copy texture sharing between Mesa and ANGLE via Linux DMA bufferResearch 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 frameworkProfiled memory usage and revealed possible memory leak of a watch app by using ValgrindImplemented 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 WebKitResource-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

01/2023 - Present	Instructional Associate at OMSCS, Georgia Tech <ul style="list-style-type: none">CS 6262: Network Security
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 the 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 ExtensionCS 6035: Intro to InfoSec
08/2017 - 05/2022	Research Assistant at the School of Computer Science, Georgia Tech <ul style="list-style-type: none">Study privacy leakage in online adsRedesign chromium to block user tracking by web browser fingerprintsDebloat Chrome browser with feature sunseting on the fly by binary rewritingImplemented an idle profiler that diagnoses off-CPU time in the multi-threaded programs using HPC
07/2016 - 08/2017	Research Associate at the School of Computer Science, Georgia Tech <ul style="list-style-type: none">Developed a defense system against micro DDoS by profiling resources with HPC (Intel PCM, MBM)

Open Source Projects

04/2013 - Present	Committer to WebKit (patches) <ul style="list-style-type: none">Contribute CSS properties (e.g., font-size-adjust)Contribute several web features for WebKitGTK (e.g., Form Validation, Gamepad API with libmanette, AVIF support with dav1d, Web Speech Synthesis with Flite and GStreamer, 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 issuesFix CVE security bugs in WebKit (CVE-2020-10018, CVE-2020-11793)
10/2013 - Present	Member of GNOME Foundation (patches) <ul style="list-style-type: none">Translate GNOME Web and its Help document in Korean

01/2015 - Present	Contributor to Chromium/Blink (patches) <ul style="list-style-type: none"> • Implemented CSS properties (e.g., font-size-adjust) • Fix many layout and rendering issues in Blink
Publications	
ACSAC 2022	DeView: Confining Progressive Web Applications by Debloating Web APIs (paper)
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	
US9524076B2	Web page management method and apparatus and storage medium thereof (alias Tab Group)
US9378300B2	Interface method and display device (alias Picture-in-Picture Play)
US20110090165A1	Interface method and display device
US20110289110A1	Method of re-searching webpage and apparatus and storage medium therefor
Talks	
12/09/2022	ACSAC 2022 in Austin, TX, U.S.A. (slides)
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)
Services	
04/2023 - Present	Representative of ByteDance at W3C Working Groups: CSS, Perf, App Sec, and Privacy
10/2021	Mentoring student participants in the Open-source SW Developer Competition, South Korea (citation)

Last update: 05/08/2023