Justin T. Becker

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Education

University of Washington — Seattle, WA
Master of Science in Computer Science — *Expected Graduation: June 2026*
Coursework: Formal Verification, Robotics

University of Maryland — College Park, MD
Bachelor of Science in Computer Engineering; GPA: 3.33 — *May 2020*

Experience

Microsoft — Redmond, WA
Software Engineer II — *August 2020 - Present*

- Developer on the Prism emulator team, enabling dynamic recompilation of x86 and x64 binaries on ARM64 processors, including feature work, as well as retrofitting legacy components to support cross-architecture scenarios
- Redesigned key code paths in Prism, including handrolled assembly, improving game performance by up to 50% in some cases, and up to 2x faster in some user scenarios.
- Performed performance analsyis of generated code using WPA, and made substantial changes to code generation resulting in 40% performance improvements in some benchmarks.
- Wrote a custom fuzzer framework to find and fix bugs in our emulation, generating over 100 trillion test cases resulting in the discovery of a number of pernicious bugs.
- Black-box debugged 3rd party applications to root cause and solve compatibility issues under emulation, including AAA games with anti-tamper protection, and other software with anti-debugging measures
- Collaborated with 3rd parties to improve compatibility of their applications, including kernel mode anti-cheat packages.
- Improved support in the Windows NT kernel for emulation scenarios, as well as general improvents for ARM64 machines.
- Analyzed assembly listings in Ghidra for ARM64, ARM32, X86, and X64 binaries for both Windows and Linux
- Developed ARM32 and ARM64 emulators for Linux hosts, including support for syscall translation
- Identified and reported bugs in the MSVC tool-chain, with specific emphasis on ARM64EC and ARM64X code generation
- built and maintained CI pipelines for my team using Azure DevOps Pipelines preventing behavioral regressions
- Enabled new ARM64X "chameleon binary" technology across the Windows code base, allowing ~500 more Windows system DLLs to be loaded in both x64 and ARM64 processes, much of this work being accomplished by bespoke automation tooling I developed

Microstrategy — Tysons, VA
Software Engineering Intern — *May 2019 - August 2019*

- Built native Business Intelligence Android application in Java and Kotlin, for AndroidTV using Leanback
- Integrated Bluetooth Low Energy based device discovery, to allow for presence based workflows

L3Harris Applied Defense Solutions — Columbia, MD
Software Engineering Intern — *May 2018 - January 2019*

- Collaborated with Aerospace Engineers to build a Space Mission Planning and Simulation tool using C# and F#
- Supported, maintained, and developed for a 24/7 production data processing system using Java and Kotlin
- Designed monitoring system using InfluxDB to alert operators in realtime of outages and performance degradation

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Lockheed Martin, Rotary and Mission Systems Moorestown, NJ
Software Engineering Intern *May 2017 - January 2018*

- Collaborated with systems engineers to develop mission critical software in Java for naval weapons systems

Web Development Intern *June 2016 - May 2017*

- Re-architected a legacy web service using modern web technologies such as AngularJS, Java Spring, and MongoDB

Projects

LANBucket *2026*

- Built tool for high performance, distributed, file sharing over a local network requiring zero configuration from users, using C++ and WinUI 3.

Terrapin Rockets *September 2016 - May 2019*

- Built real-time control software to guide a faux space lander during its mission using an Arduino

Robotics@Maryland *September 2016 - April 2017*

- Researched and implemented a computer vision system, using OpenCV, to perform classification tasks

Leadership

Bitcamp College Park, MD
Executive Director *May 2019 - May 2020*

- Led the 75+ person organizing team of Bitcamp, the 3rd largest college hackathon in the US
- Directly managed a team of 10 directors, spanning Technology, Logistics, Marketing, Sponsorship, and Experience

Director of Logistics *August 2018 - May 2019*

- Led and managed a cross disciplinary student team of 22 organizers, planning food, power, networking, A/V, scheduling, volunteers, mentors, travel, highschool outreach, hardware, and workshops for 1,300 participants

Skills

Languages: C/C++, Assembly, Java, Python, Bash, Powershell | MATLAB, C#, JS | Kotlin, Rust, Haskell
Tools: Ghidra, WinDbg, GDB, SQL | Docker, MongoDB, InfluxDB, ROS | OpenCV, Angular
Software: Unix, Git, Visual Studio, Android Studio | Jira, Azure DevOps, IntelliJ | Xilinx, ClearCase

Honors and Awards

Dean's List *Spring 2016, Fall 2019, Spring 2020*
Eagle Scout Rank *May 2016*

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