

MORGAN GANGWERE

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I'm a communications major with ten years of software experience. While I don't have a formal degree in computer science, my knowledge base is broader than the typical CS student—with greater depth in various areas of personal interest such as security and user experience. I learn fast, taking on new subjects by learning from area experts and a plethora of sources. I appreciate it when someone shows me I'm wrong or ill-informed about a subject, because it gives me a chance to make new connections and learn something new.

I've been exposed to many different paradigms, environments, languages, and challenges along the way; contributing to large open source projects I have experienced how people communicate with each other across a variety of mediums and organizations and how it has affected a project in general. This has given me a chance to examine pros and cons of each approach to project design, management, and maintenance, when to use them, and even when they must be applied with the understanding that there are no good outcomes.

I've been a member of INCOSE, the International Counsel on Systems Engineering, numerous user groups, and spoken at conferences on a variety of topics, from typography, internet communities, in-depth technical content about reverse engineering, and signal/operational intelligence.

EXPERIENCE AND SELECTED PROJECTS

Much of my work ends up on GitHub. A much more comprehensive list of all my previous and ongoing projects is available at <https://zaibatsutel.net/projects/>

FALL 2018

PROJECT: NEW TRICKS, OLD DOGS: ESP8266 SERIAL BRIDGE

Designed and prototype assembled hardware for the ESP8266 WiFi system on chip to emulate a Hayes AT Modem for use in legacy computers, making the Internet look like a phone call.

SPRING 2018

PROJECT: LAYER EIGHT PHOTOGRAPHY (LAYER-EIGHT.PHOTOGRAPHY)

Layer Eight refers to the Human layer in networking. As a part of a photojournalism class, I did an interview with a friend of mine who inspired me and began writing about my world in slightly more photojournalistic detail.

SPRING 2018

PROJECT: TALKOTIMER: A TALK TIMER HELPER

When talking at LibrePlanet, I realized I needed a way to keep myself on time. While on the plane, I wrote a helper tool in Processing. This timer satisfied a set of requirements: It had to tell me what slide I should be on, how long I've got on that slide, and how long I've

been talking for. This tool went through quite a few rapid iterations before settling on what it finally became. I was able to use it during my talk and it helped myself and several others!

SUMMER 2017

STUDENT DEVELOPER, BERKMAN KLEIN CENTER AT HARVARD UNIVERSITY

I was responsible for porting an existing PHP application which depended on a variety of perl, bash, and Lua scripts and interface into a single monolithic Python application which replicated the existing functionality. I designed, planned and implemented the application with a spec sheet and presented multiple proof-of-concept and live demonstrations to mentors within the Berkman Klein center organization as a part of Google Summer of Code.

SUMMER 2016

PROJECT: ZAIBATSUPASS: WINDOWS 10 MOBILE ORCA CARD READER

In 2016, I got a Lumia 650. This meant I was without FareBot, a utility to read my ORCA cards while I'm in the Seattle area. Unfazed, I cracked open a copy of Visual Studio and wrote a port of FareBot's ORCA card reading logic and made it trivially easy to add support for other cards; As an experiment, I began adding support for MyKi cards, however I didn't have one to test with.

SUMMER 2016

CONTRIBUTION: .NET SUPPORT IN KAITAI STRUCT

Kaitai Struct is a mechanism to turn binary structures (e.g. bitmaps) into malleable data structures through code generation (e.g. C++/Java). I added preliminary support for .NET runtime languages through an adaptation of the existing Java implementation.

SPRING 2016

CVE DISCLOSURE: CVE 2016-3966

I disclosed via CERT-CC a vulnerability in ASUS' LiveUpdate software that allowed an attacker in a privileged position (e.g. coffee shop with an open WiFi network) to install drivers, run executables as NT Authority\SYSTEM, or reflash BIOS/UEFI firmware through hijacked HTTP requests. This affected all versions before it was patched in May 2016, going back to the introduction of ASUS' eeePC platform in the early 2000s.

EARLY 2014-MID 2016

PROJECT: ATOMIC: IRC CLIENT FOR ANDROID BASED ON YAAIC

In 2013 I wanted more out of the IRC client I was using on Android. Frustrated at the lack of features in YAAIC (Yet Another Android IRC Client), I forked the client and added the features I was looking for, including support for ZNC, color schemes, and later more work on bringing YAAIC up to modern Android standards as of Android 4.4 (KitKat).

SELECTED TALKS

AUGUST 2018; LAS VEGAS, NV

DEF CON 26: IT'S ASSEMBLER, JIM, BUT NOT AS WE KNOW IT!

I presented on the topic of embedded computers built around modern System-On-Chip designs running Linux (and similar), from basic ideas to attack surfaces and reverse

engineering. Placed into the DC101 basics-oriented track, this presentation focused on high level concepts and making sense of terminology.

JULY 2018; REDMOND, WA

DC206: KEEPING IT AT HOME: HACKER-FRIENDLY HOME AUTOMATION

Co-presented about home automation's history and how to implement it with a focus on information security and reduction of vendor lock-in. Discussed the tradeoffs between various vendors, and invited community discussion on tradeoffs between personal infrastructure maintenance and ease of maintenance, information and operational security, as well as integrating currently installed systems together.

MARCH 2018; BOSTON, MA

LIBREPLANET: THE DARK SIDE OF FREE SOFTWARE COMMUNITIES

I presented a series of poor behaviors within online communities and how they express themselves in free software communities specifically, as well as a series of tools for moderators and community members to curb some of these behaviors. Focuses included public perception, internal politics, and low-effort social cohesion.

AUGUST 2016; LAS VEGAS, NV

DEF CON 24/PACKET HACKING VILLAGE: FIDDLER ON THE ROOF: A NO-NONSENSE LOOK AT THE FIDDLER PROXY AND USAGE

I gave an overview of the Fiddler active proxy and its uses in the areas of intelligence, surveillance, and general network understanding. I contrasted it with its peers such as the Burp suite and showed an example plugin which monitored HTTP requests for HTTP authentication headers and common POST data logins.

2013; ALBUQUERQUE, NM

NM .NET USER GROUP: GIT: ZERO TO HERO

The NM .NET User Group (NMUG) had a lot of users who weren't familiar with Git. I compared DVCS such as Git and Mercurial to centralized VCS such as SVN and CVS, introduced the basic concepts of Git, and explored various Git hosting solutions.

OCTOBER 2011; ALBUQUERQUE, NM

NM .NET USER GROUP: CROSS-PLATFORM WITH MONO

I gave an overview of the tools and techniques used for working with the Mono framework, such as IDEs, compiler changes and existing framework availability. Primary focus was on command-line tools and limitations of the tools at the time.

EDUCATION AND CERTIFICATIONS

MAY 2019 (EXPECTED)

BA COMMUNICATIONS, UNIVERSITY OF NEW MEXICO

I entered UNM as a transfer student and moved around several times before finding myself in the communications department. It's there that I was able to explore one of my topics of interest: communication styles of online and distributed communities.

LATE 2017

AMATEUR RADIO LICENSE K9HAX, FEDERAL COMMUNICATIONS COMMISSION

I challenged myself to study and learn a new technical field, that of RF communications. In 2017, I achieved my General license, the middle of three tiers of license granted by the Federal Communications Commission.

2011-2014

AAS NETWORK ADMINISTRATION, CENTRAL NEW MEXICO COMMUNITY COLLEGE

Focused on Cisco network administration, with several courses on Windows Server, Linux administration and business-IT relations. While there, I was encouraged to take a wide variety of electives and took several courses in creative writing as well as C#/Java and Oracle SQL.

SKILLS

- Project planning and timeline estimation
- Software design and architecture knowledge, both good and bad (and why)
- I've saved a lot of class projects. *A lot*
- I've learned how to *learn* at a rapid pace
- I've built *and* maintained systems
- C/C++/C#/Java/Python
- Android development, maintenance
- Security focused, *user focused* processes are my jam
- A talent for finding exactly who to yell at, and *when*

ACTIVITIES

I began developing RSI in the later years of my bachelor's degree and began building custom keyboards that avoid the strain on my wrists. Before embarking on a new one, I plan it out carefully: I have knowledge of vendors, what tradeoffs each vendor has, and how much it will cost—roughly, within 5-10 percent—how much a keyboard will cost to produce. I have built three keyboards for myself and assisted in building several others.

I adore volunteering and have done so for many years with makerspaces such as Quelab in Albuquerque, NM. My experience with Quelab has lead me to learn how to machine, 3D print, repair electronics, make bad choices and reflect on *why* they were bad, and how to work with members of the public in an educational setting. Quelab has been an integral part in how I view both projects (as Quelab is, itself, one giant volunteer project) and how I handle seeing conflict: Quelab, being run by tech folk, has its own set of political issues which I've had a hand in trying to smooth out.