

Languages and Technologies

Go, Python, 6502 ASM, Javascript, PHP, Lua, Haskell, Bash, HTML, CSS, JSON, YAML, XML, SQL, Markdown
Linux, Unix, Windows, CentOS, RHEL, Unix Permissions, Cron, TCP/IP, HTTP, TLS, SSL, SSH, MySQL, KiCAD

Work Experience

File Format Development Team Lead

(Volunteer Staff) 2021 - 2023

TASBot L3C – Remote

- In charge of creating and writing documentation for a custom open standard file format for the TASBot team to use
- Wrote software tools to create files in this new custom file format

NES Care Package Creator

(Commission) 2018-2019

Client: Dan Kaminski

- Created nearly 200 care packages that included a custom box, NES cartridge, NES game console, and a letter
- Designed the custom box, NES cartridge label, NES cartridge instruction manual
- Handled the logistics of assembling and shipping the nearly 200 care packages
- Developed the software for the NES cartridges and programmed all of the EPROM chips on the cartridges by hand

Conference Name Badge Developer

(Contract) 2018

Client: Midwest Gaming Classic

- Created first name badge for a gaming conference that is a playable game cartridge
- Developed new NES game "Bovinium Quest - Batteries Not Included" from scratch in 6502 Assembly
- Programmed, assembled, and soldered over 600 cartridges by hand
- Created score code system that lets players submit their high scores to an online leaderboard

Web Designer and Developer

(Contract) 2015

Client: Toymaker Television (Tymkrs)

- Created a website design for desktop with the design requirements of needing to be static and easily maintainable
- Optimized original website design to reduce loading times by more than 75% and allow for dynamic content size

Systems Administrator and Web Developer

2011 - 2013

Jon Hassler Theater (Rural America Arts Center) – Plainview, MN

- Created a web-based box office ticket reservation system to improve work productivity
- Developed and maintained website, increasing page traffic by over 800%
- Managed computer systems and networks to keep business operations functioning

Presentations

Bet You Never Played an NES Game Like This: Innovating Under Limitations

2019

Cyphercon 4.0 – Milwaukee, WI

<vigrey.com/presentations/2019-04-12-cyphercon.pdf>

I Dream of Game Genies and ZIP Files - Hacking the NES

2018

The Circle of HOPE Conference – Manhattan, NY

<vigrey.com/presentations/2018-07-20-hope.pdf>

Phishing for Root (How I Got Access to Root on Your Computer With 8 Seconds of Physical Access)

2017

DEFCON 201 Technical Meeting – Hoboken, NJ

<vigrey.com/presentations/2017-10-20-defcon-201.pdf>

Attacking Your Two-Factor Authentication (PS: Use Two-Factor Authentication)

2017

K-LUG Technical Meeting – Rochester, MN

<vigrey.com/presentations/2017-06-08-k-lug.pdf>

Personal Projects

Huginn <vigrey.com/git/huginn> Gemtext to static HTML file converter written in Go	2023
Fulla <vigrey.com/git/fulla> Password and Time-based One-Time Password (TOTP) manager written in Go	2023
Muninn <vigrey.com/git/muninn> Static Gemtext page generator written in Go for browsing through Git Repositories	2023
Bergelmir <vigrey.com/git/bergelmir> Server written in Go that serves content over HTTP and the Gemini protocol	2022
TASD File Format Specification <vigrey.com/git/TASD-Spec> A file format for storing data that can be used by Tool Assisted Speedrun (TAS) replay devices to play a TAS on physical video game console hardware	2022
Szygy <vigrey.com/git/szygy> Go program that uses formulas from "Astronomical Algorithms, 2nd Edition" by Jean Meeus to accurately calculate the 3D position in space of the Sun, Moon, and a latitude/longitude location on Earth for a given time	2022
CALENDAR_DOT_EXE <vigrey.com/git/calendar_dot_exe> NES ROM written in 6502 ASM that provides accurate calendars for years -999,999 to 999,999 in the Gregorian, Julian, and Jewish calendar systems	2020
ISS Tracker for NES <vigrey.com/git/iss-nes> Project that tracks the International Space Station and displays its location on an NES. This project was written about in a VICE article title "Hack Lets You Track the International Space Station With an NES".	2020
Gameboy/NES/PDF/HTML/ZIP Polyglot File <vigrey.com/git/gb-nes-pdf-html-zip> Proof of concept file that is simultaneously a valid and functioning Gameboy ROM, NES ROM, PDF file, HTML File, and a ZIP file that, when unzipped, produces the source code for the file	2019
Modem-Tap <vigrey.com/git/modem-tap> Network middleware audio engine written in Go that emulates a network connected through a Bell103 dial-up modem	2017
rcube <vigrey.com/git/rcube> Python module that solves scrambled Rubik's Cubes	2013
datecalc <vigrey.com/git/datecalc> Python module that can calculate the day of the week for any date (Ported to Go, Ruby, and Javascript)	2012

Community Memberships

TASBot Development Community – Remote	2018 - 2023
The Rabbit Hole (Operated by the Tymkrs) Makerspace – Rochester, MN	2013 - 2022
DEFCON 201 Makerspace – Hoboken, NJ	2017 - 2019
K-LUG Linux User Group – Rochester, MN	2016 - 2017

Publications

Concealing ZIP Files in NES Cartridges Proof of Concept or GTFO Issue 0x18, 4, pp 17-21	2018 <www.alchemistowl.org/pocorgtfo/pocorgtfo18.pdf>
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