Jonathan Papaycik

Systems & Software Engineer

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// PROFESSIONAL SUMMARY

Computer Science graduate from **Western Governors University** specializing in scalable backend services, real-time distributed networking, and audio/video automation pipelines. Strong foundation in algorithmic complexity, Linux input subsystems, and systems-level programming.

// EDUCATION & CERTIFICATIONS

B.S. Computer Science

Western Governors University

Data Structures & Algorithms | Operating Systems | Network & Security | AI & Machine Learning Optimization | Software Engineering & QA | Computer Architecture

Industry Certifications

Verified Credentials

Linux Essentials (LPI) | ITIL 4 Foundation

// EXPERIENCE & COMMUNITY LEADERSHIP

Operations & Inventory Problem Solve Specialist

Amazon Fulfillment Center

Managed inventory exceptions, database record integrity, and shift-level operational reporting within high-volume fulfillment environments.

- Audited and reconciled inbound/outbound inventory discrepancies, damaged goods, and misidentified SKUs via internal web management interfaces and database entry tools.
- Investigated root causes of physical vs. digital inventory mismatches, executing manual data corrections to maintain real-time inventory accuracy.
- Monitored live warehouse throughput, backlog rates, and labor performance metrics across picking, packing, and stow departments.
- Authored end-of-shift operational reports summarizing warehouse productivity, process bottlenecks, and systemic fulfillment errors for management.
- Collaborated across operations, receiving, and quality control departments to troubleshoot exception workflows and improve standard operating procedures.

Inventory Reconciliation | Database Record Entry | Root Cause Analysis | Fulfillment Operations | KPI Reporting | Quality Assurance

Audio / Video Production & Media Systems

Youth Ministry / Volunteer

Direct weekly audio engineering, and media delivery pipelines for weekly services and youth events.

- Operate and configure live digital video recording systems.
- Architected automated post-production workflows to reframe and publish sermon recordings to short-form social channels (TikTok, Shorts).

OBS Studio | Signal Routing | Video Production | Pipeline Automation

// TECHNICAL SKILLS

Languages & Frameworks

Python | Java | Flask | Bash | GDScript | Spring Boot

Systems & Infrastructure

Linux Subsystems | Docker | TCP Sockets | FFmpeg | AWS Basics

Databases & Web

MySQL | SQLite | MongoDB | HTML5 / CSS3

Business & Operations

Inventory Systems | Root Cause Analysis | Process Automation | Shift / KPI Reporting | ITIL 4 Framework

// FEATURED ENGINEERING PROJECTS

Godot + Astron MMO Client & DC Protocol Parser

Networking / Distributed Systems

Engineered a client networking architecture connecting Godot to Astron cluster backends via variable-length binary datagrams and zone interest management.

- Custom runtime DC lexer/parser resolving multi-inheritance, atomic fields, and molecular groupings
- Stream-oriented TCP framing, binary serialization, and fixed-point value packing/unpacking
- DistributedObject lifecycle pipeline handling dynamic updates and state cleanups

GDScript | Astron | MongoDB | TCP Sockets | Binary Protocols | Replication

Automated Video Tracking & Reframing Pipeline

Computer Vision / Signal Processing

Engineered an automated pipeline converting wide-angle church sermon recordings into dynamic, stabilized 9:16 vertical clips for social media distribution.

- Acoustic sync engine utilizing Librosa onset envelopes and SciPy signal cross-correlation
- VRAM-optimized SAM 2 visual tracking using proxy frames and 1D Gaussian smoothing trajectories
- Rawvideo subprocess streaming direct to FFmpeg pipes, avoiding intermediate disk I/O

Python | PyTorch | SAM 2 | OpenCV | FFmpeg | SciPy

Automated Stem Separation & Multi-Track MKA Packager

Audio Engineering / Automation Pipeline

Engineered an automated end-to-end media pipeline in Python to ingest, isolate, and containerize full-album audio releases.

- Automated 4-stem ML source separation (vocals, drums, bass, other) using HTDemucs
- Dynamic FFmpeg subprocess multiplexing to map multi-stream audio and attach cover art
- Peak dynamic range normalization and automated metadata tagging for album-level batching

Python | FFmpeg | Demucs | yt-dlp | Audio Processing

BLE Peripheral Driver & Virtual Mouse Emulation Layer

Embedded / Linux Kernel Subsystems

Engineered a low-latency userspace Linux input driver to bridge unsupported BLE controllers into virtual system pointer devices.

- Decoded GATT notification streams with auto-reconnection and connection lifecycle logic via Bleak
- 60Hz continuous loop applying quadratic velocity ramping and sub-pixel accumulation
- Kernel-level input synthesis via Linux uinput/evdev for seamless event dispatching

Python | Linux uinput | BLE/GATT | AsyncIO | evdev