

# Jerry Ma

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## Education

### University of California, San Diego

09/2024 - 12/2025

*M.S · Electrical & Computer Engineering, Machine Learning and Data Science*

San Diego, CA

Coursework: Parallel Computation, Advanced Image Synthesis, Recommender Sys&Web Mining, etc.

### Huazhong University of Science and Technology

09/2018 - 06/2022

*B.E · Computer Science*

China

Coursework: Data Structures/Algorithms, Software Engineering, Computer Network, Database System, etc.

## Work Experience

### Alibaba | Software Development Engineer@ Taobao&Tmall, AI Pilot

07/2022 - 07/2024

*Streamlined the design process with multiple utilities and AI workflows, ranking **1st/27** in Alibaba Innovation Competition.*

- Atomized and deployed AI capabilities with Kubernetes and RESTful APIs, engineered a one-stop AI Agent management platform by React to orchestrate and share consumable AI task pipelines.
- Eliminated file format differences among various professional design software via JavaScript toolchain, uploading and maintained the parsed schema in the MySQL database, facilitating **2,000,000+** design work.
- Combined the Konva.js online graphic editor with LLM&AIGC capabilities, enabling post-processing and export of design files in the browser which **saved 40%** of design & verification time.

*Upgraded the multimedia production services iteratively, providing technical support for **5 business scenarios**.*

- Refactored and enhanced the image processing module by Rust&WASM, leveraging the data-parallelism library Rayon and pixel buffer management to achieve a **1.8x** performance improvement.
- Unified the interface format of the C++ multimedia service using protobuf and implemented heartbeat detection, reducing the crash rates of multi-threading architecture from **3% to 0.5%**.
- Migrated the paid Alibaba Cloud Text-to-Speech service to a Sambert-Hifigan model deployed with Python and Flask, providing fluent and emotive voice narration.
- Scraped **60k+** promotional posts from social media and utilized RAG to fine-tune language model Qwen1.5-1.8B for automated generation of stylized product descriptions for advertisements.

*Engineered a cross-platform multimedia composition framework with standard input.*

- Architected an FFmpeg composition framework with NodeJS for both CPU/GPU-based machines.
- Designed a JSON-structured template protocol to enable customizable combination of various media files.
- Leveraged Redis to cache glyph data, significantly reducing **18%** of character parsing time.
- Successfully promoted this framework and protocol across **3 technical teams** in Alibaba.

### Alibaba | Software Development Intern@ Live Streaming & Video Tech

06/2021 - 08/2021

*Introduced an innovative solution for multi-track video editing and parallel composition within Chrome browser.*

- Engineered a video editor SDK by TypeScript, enabling in-browser pixel stream encoding and MPEG-4 binary file generation through FFmpeg.wasm and WebCodecs. This work has been granted a national patent.
- Accelerated the video compositing speed **2.4x~3x** by leveraging asynchronous programming and WebGL.

## School Project

### Mushroom: Cross-Platform Immersive VR Conference App

03/2022 - 06/2022

- Developed a VR conference platform by Socket.IO and ThreeJS, supporting 4-6 participants joining meetings via mobile, PC, and VR headsets such as Oculus Quest 2.
- Proposed a decentralized portrait segmentation framework to overcome the limitations of WebRTC in transmitting transparent pixels, boosting rendering performance from **25 FPS to 47 FPS**.
- Trained an efficient wake word recognition model using TensorFlow for immersive interaction.

## Skills

**Programming Languages:** JavaScript (React), Rust (WebAssembly), C++, Python, TypeScript, NodeJS, Java

**Tools:** FFmpeg, MySQL, MongoDB, HTML/CSS, Git, Docker, TensorFlow, RESTful APIs, Flask, AWS, CI/CD

**Others:** Linux, WebRTC, WebGL, UI/UX, Web Scraper, JSON, protobuf, Redis, VR/AR, Electron, Shader