

# Tyler Guest

Software Developer

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*Software developer with hands-on experience in C++, Python, and full-stack web development. Passionate about scalable tools, from low-level memory allocators to modern web applications, combining creative design experience with a rigorous computer science foundation.*

## Technical Skills

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**Languages:** C/C++, Python, JavaScript, TypeScript, SQL

**Libraries/Frameworks:** React, Next.js, JUCE, PyTorch, NumPy, Matplotlib

**Tools:** Git, GitHub, VS Code, Vercel, Supabase

**Operating Systems:** Ubuntu 24.04.2, Windows 11

## Technical Projects

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**dashtools** | <https://dashtools.vercel.app/>

- Built a modern productivity dashboard with multi-window UI using Next.js, React, and Supabase, deployed on Vercel.
- Implemented draggable, resizable apps (Calendar, Notes, Chatbot, etc.) to support efficient multitasking.
- Integrated real-time authentication, persistent cloud storage, and responsive design for guest and signed-in users.

**memoman** | <https://github.com/tylerguest/memoman>

- Developed a malloc/free implementation in C with bump allocation, 8-byte alignment, overflow protection, and heap statistics.
- Designed a 1MB heap manager with allocation tracking and reset functionality to showcase OS-level memory management.
- Built a test suite covering edge cases, alignment validation, and performance metrics using Make for systematic debugging.

**megatensor** | <https://github.com/tylerguest/megatensor>

- Created a lightweight Python tensor library with autograd and neural network operations.
- Designed an intuitive API for tensor creation, mathematical operations, and gradient tracking.
- Implemented modular layers, optimizers, and loss functions for extensible model training.

**4kverb** | <https://github.com/tylerguest/4kverb>

- Developed a real-time reverb VST plugin in C++ with JUCE for high-fidelity stereo audio processing.
- Built a custom GUI with channel strip-style controls for intuitive sound shaping.
- Optimized delay-based DSP algorithms to achieve minimal latency and efficient CPU performance.

## Education

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**University of Michigan – Flint**

*Bachelor of Science in Computer Science*

**Flint, MI**

*2023 - 2027*

**GPA:** 3.89 / 4.0

**Relevant Coursework:** Data Structures, Operating Systems, Computer Architecture, Discrete Structures, Database Design

**Honors/Awards:** Dean's List (2023-2025), Sonya Carson Scholarship (2024-2025), James B. Angell Scholar (2025)

## Work Experience

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**We Can Do It Graphics**

*Retail Manager / Graphic Designer*

**Flint, MI**

*2015 - 2023*

- Led a 5-person team, overseeing project workflows and optimizing resources to improve operational efficiency.
- Managed end-to-end production of graphic materials, ensuring high-quality outputs while meeting tight deadlines.
- Utilized Adobe Photoshop, Illustrator, and wide-format printing tools to design and produce custom graphics for clients.
- Implemented process improvements that enhanced productivity and reduced turnaround times.
- Developed client-facing solutions, handling consultations and custom orders to align with branding needs.