

Desmond W. Clay

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Summary / Professional Profile

- Highly motivated and versatile technologist with a proven ability to rapidly learn and apply new technologies to design and implement innovative software, AI, and hardware solutions.
- Self-starter with a strong track record of taking ownership of complex challenges and independently driving projects from concept to completion.
- Seeking a challenging remote coding role where I can leverage my full-stack development, AI/ML, problem-solving, and rapid learning skills to contribute to dynamic projects and achieve impactful results.

Skills & Technologies

- **Coding & Scripting:** Python, JavaScript, HTML, CSS, Lua, Fast Adapting
- **AI & Data:** NLP, Computer Vision, Data Pipelines, Modern AI Practices, Generative Models (Gemini, GPT), AI Agents, Data Handling
- **Web Development:** Full-Stack Development, Flask, SQLAlchemy, REST APIs, Jinja, Modular Design, User Authentication, Dynamic Content
- **Cloud & Tools:** Google Cloud Platform (Cloud Storage, Virtual Machines), Git, Automation, API Integration (Stripe)
- **Hardware & Prototyping:** Raspberry Pi, IoT, 3D Printing/Design, Precise Measurements
- **Methodologies:** Solution Architecture, Creative Design, Logical Structuring, Rapid Learning & Adaptation, Analytical Problem Solving, Independent Research (Documentation, Source Code)

Projects

D-Net Platform (Web | API | AI)

- Architected and developed a modular, full-stack web platform using **Python (Flask), Jinja, JavaScript, and SQLAlchemy** to provide accessible AI and API services.
- Designed and implemented a dynamic content management system allowing users and administrators to create and customize pages and content blocks without coding, utilizing **WYSIWYG CKEditor**.
- Developed an innovative **AI Persona** feature integrating **Gemini and other generative models** to create personalized, character-adherent AI companions with chat and voice-enabled interfaces.

- Integrated the **Stripe API** to handle secure payment processing and manage a custom digital currency ("Compu-Tokens") for AI service consumption.
- Engineered robust **user and administrator authentication** and authorization systems with dynamic routing based on user roles.
- Overcame significant technical challenges related to dependency management, database compatibility (encoding/decoding data types), working with raw audio data, and programmatic content generation.

Tactical AI (Real-time Gaming)

- Developed a real-time AI system using **Python and OpenCV** to provide tactical guidance in a gaming environment (Halo: The Master Chief Collection).
- Trained a custom **HAAR Cascade** for accurate detection of in-game entities on the mini-map.
- Created a **Python utility** to automate the processing and resizing of hundreds of training images, overcoming data incompatibility issues and significantly accelerating the development workflow.
- Implemented logic to analyze detected entities' positions and provide directional audio cues using **pyttsx** speech synthesis, enhancing player awareness.
- Addressed real-time processing challenges to ensure timely detection and guidance during gameplay.

Raspberry Pi Automation System

- Designed and built a custom automation device utilizing a **Raspberry Pi** configured as a Human Input Device (HID) to achieve hardware-level control of keyboard input.
- Developed a **Python utility** to programmatically send keycodes and commands, enabling true automation recognized by any device accepting a USB keyboard.
- Successfully overcame technical challenges in configuring the Raspberry Pi as an HID and accurately mapping and sending keycodes.
- Created a functional proof-of-concept demonstrating the ability to control device input without software emulation, opening possibilities for custom controllers and advanced automation tasks.

High-Accuracy Eye Tracking Software

- Developed eye pupil tracking software using **OpenCV Python**, leveraging **HAAR cascades** for eye region isolation and **blob detection** for pupil identification.
- Focused on achieving high accuracy in pupil tracking by implementing custom functions for **thresholding and normalization** to maintain consistent detection across varying lighting and movement conditions.
- Explored the potential for eye-input mapping for device interfaces, developing

- initial logic for smooth cursor movement based on eye position.
- Successfully built a functional Computer Vision application demonstrating the ability to process and interpret real-time visual data for interactive applications.

Relevant Job Experience

D-Net Lab (Independent & Client Solutions) | Technologist / Solution Architect | 2020 - Current

- Architected and developed custom software, AI-driven applications, and hardware solutions for various independent and client projects (details in Projects section).
- Managed projects end-to-end, from initial concept and requirements gathering to development and deployment.
- Specialized in delivering accessible and user-centric technology solutions.

Instacart & DoorDash | Delivery Driver | 2021 - Current

- Managed time and logistics effectively in dynamic, real-time environments to ensure timely deliveries.
- Honed independent work habits, self-management, and efficient problem resolution while interacting directly with customers.
- Consistently met or exceeded performance expectations through goal-orientation and commitment to results.

Education

- Mohawk Valley Community College | International Studies
- Rome Free Academy | High School Diploma
- BOCES | IT-Systems (Networking Focus)

Contact

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