

Final Project Proposal: Chagas AI System

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Comps

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Current Operations in the Community: Currently, the identification of *Triatoma dimidiata* (Kissing Bug) and the assessment of its infection status rely on manual inspection by specialists or laboratory parasitology tests. Communities in endemic areas often have to send physical specimens to central labs, leading to significant delays in diagnosis and intervention.

Pros of Current Setup:

- High accuracy when performed by experienced entomologists.
- Established protocols for laboratory-based parasitology.

Cons of Current Setup:

- Slow turnaround times for results, which can delay life-saving treatment.
- Limited accessibility for remote or rural communities.
- High cost associated with physical transport and expert labor.
- Vulnerability to human error during manual identification under fatigue.

Solution

Project Impact: The **Chagas AI** project provides an automated, mobile-ready solution for the immediate identification of *Triatoma dimidiata* and its infection status. By utilizing a MobileNetV2-based AI model, the project empowers health workers and community members to receive instant analysis from a simple photograph. This reduces the burden on centralized labs and allows for rapid mapping of high-risk "hotspots" to prevent the spread of Chagas disease.


Key Features of the Project

- **Automated Image Preprocessing:** Cleans backgrounds and normalizes lighting to ensure high-accuracy analysis regardless of whether the photo was taken in a lab or in the field.
- **Infection Detection:** Uses deep learning to distinguish between infected and uninfected specimens.
- **Geolocation Mapping:** Automatically logs the location of found bugs to create a real-time risk map.
- **Admin Moderation Panel:** Allows experts to review AI predictions and approve data for public health reporting.

Task Overview & Responsibility






The project will be accomplished through the following modules:



1. **System Architecture & Backend:** Designing the Flask API and SQLite database structure.
2. **AI Model Refinement:** Using data augmentation to improve model robustness with limited datasets.
3. **Frontend Development:** Creating the web-based UI for user uploads and the admin dashboard.
4. **Testing & Validation:** Running field tests with various lighting conditions to verify accuracy.





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	A	B	C	D	E
1	Task Name	ETA	Assigned To		
2	Database & API	Jan 20, 2026	Adel		
3	AI Model Trainin	Jan 27, 2026	adel		
4	Image Preproce	Feb 05, 2026	Adel		
5	UI/UX Implemen	Feb 12, 2026	adel		
6	Final Testing & C	Feb 20, 2026	adel		
7					