College of Engineering

Department of Software Engineering

Undergraduate Project Proposal

Title: HandyConnect

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what makes you system different from ureport and other related platforms ?

Ethiopian AI-Powered Public Opinion Platform for Policy Insights

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1. Problem Statement

Ethiopia faces significant challenges in civic discourse and public opinion formation, particularly in the context of digital media. While social media has become a tool for civic engagement, it has often been criticized for exacerbating political polarization, spreading misinformation, and fostering environments of harassment and hate speech. According to UNICEF, false news, harassment, and trolling deter young people, especially women, from participating in civic discussions[2]. For instance, online trolls, sometimes posing as rival ethnic groups, escalate tensions and create an atmosphere where many feel unsafe expressing their opinions[3][4]. This environment contributes to a distrust of social media platforms, limiting the potential for constructive public dialogue.

While Ethiopia has survey platforms (e.g., Afrobarometer), these are infrequent and not accessible in real-time to the public or policymakers. Existing mechanisms, such as SMS-based platforms (e.g., Ethiopia's "U-Report"), are limited in scope and do not adequately address polarization or prevent manipulation of results, such as spam votes or coordinated campaigns. This can reduce the reliability of public opinion data and diminish trust in civic engagement tools.

what are those limitations

The proposed Ethiopian Public Opinion & Discussion Platform aims to enhance these pre-existing tools by leveraging AI to ensure accurate, trustworthy voting results and meaningful engagement. AI modules will detect and filter spam or coordinated voting activity, provide demographic-sensitive poll recommendations, and generate real-time visualizations that allow users and stakeholders to interact with reliable data. By combining AI-driven integrity checks with dynamic engagement features, the platform will promote constructive dialogue, bridge citizens and policymakers, and strengthen trust in digital civic participation.

how

recommendations based on what?

2. Project Goal and Objectives

why only web ? is it better in it's accessibility? why not mobile app also ?

Goal

Develop a secure, multilingual web platform that enables Ethiopians to anonymously vote on and discuss critical social, economic, and policy issues, generating reliable public-opinion data and fostering constructive civic dialogue.

if it is about engagement is web more easy to facilitate?

Long-term Vision

Become a trusted civic-tech hub where citizens (especially youth) regularly share views and engage in issue-based debate; empower NGOs, researchers, and officials with real-time, data-driven insights; and strengthen participatory democracy by bridging citizens and policymakers.

for the policymakers and like use web but for participant it is more easier to consider Mobile app

Objectives

- **Platform Implementation:**Build core features including anonymous polls, moderated discussion forums, and user profiles.
- **AI Integration:** Integrate AI-powered modules to
    - detect and filter fake votes and bots
    - recommend polls based on user interests and demographics
    - provide auto-translation of content among Ethiopia's major languages.
- **User Engagement:** Recruit a pilot cohort (e.g. 500+ users) to use the platform for X months. Target at least 80% user satisfaction and active participation rates above 50%.
- **Data Outputs:** Generate anonymized opinion datasets on topics of interest and deliver reports or visualizations to stakeholders
- **Evaluation:** Conduct user surveys and focus groups to assess usability, perceived privacy, and trust; refine the system iteratively.

0. General - Specific

These objectives together will realize the platform's vision by delivering a functional system and demonstrating its impact on participation and data access.

3. Scope

The project will include the following features and components:

- **User Interface:** A responsive web platform built using an open-source tech stack (e.g., MERN or Python/React).
- **Anonymous Accounts:** Pseudonymous registration, enabling demographic tagging (e.g., age, region) without revealing real identity.
- **Polling Mechanism:** Single and multiple-choice polls on current issues with real-time voting.Designed to reduce self-selection bias by emphasizing AI-driven poll recommendations rather than open-ended user submissions.
- **AI Features (Current Scope):**
    - **Bot Detection:** Automated identification and filtering of suspicious or coordinated activity to preserve the integrity of polls.
    - **Recommendation System:** AI-based collaborative filtering to recommend categories of polls relevant to each user's interests and demographics.
    - **Dynamic Dashboards:** AI-powered dashboards with interactive visualizations (e.g., heatmaps, charts) for real-time insights.
- **Privacy & Security:** Standard encryption (HTTPS), minimal data retention, and transparent privacy policies.

Excluded from Scope:

- Formal electoral voting features (this is not an electoral system).
- Advanced identity verification beyond bot detection.
- Real-time video/audio features.
- SMS integration (due to time constraints).

Which identity
- users
- bot
or what

1. so how your system address users with no internet access

2. time is not enough reason to not to include this feature

Regional result analysis need to be included in the current version of your system

Future Scope (Beyond MVP):

- **AI-Driven Demographic Testing:** Advanced models to evaluate how different demographic groups (e.g., by region or age) respond to polls, enabling richer social insights while protecting anonymity.
- **Self-Selection Bias Handling:** AI models that detect and mitigate misleading trends caused by self-selected data, ensuring results remain representative.
- **Real-Time Sentiment Analysis:** Natural Language Processing (NLP) tools to analyze forum discussions in real time, extracting sentiment trends and linking them back to poll data for deeper insights.

if so how your system show recommendations for the users ?

4. Significance of the Project

This platform addresses critical gaps in Ethiopia's civic ecosystem:

- **Countering Polarized Discourse:** The platform will foster safe spaces for balanced discussions, combating the polarization seen in traditional media. AI moderation will ensure fact-based debates and discourage hate speech.
- **Youth Participation:** With anonymity as a core feature, the platform will empower youth (who represent 70% of the population) to engage without fear of harassment, addressing UNICEF's findings that mistrust and online harassment deter youth participation.
- **Real-Time Data Access:** Policymakers, NGOs, and researchers will have continuous access to real-time citizen feedback, promoting transparency and accountability. The platform's open data outputs will help stakeholders make informed decisions.

In sum, the project leverages civic-technology principles to strengthen democracy: digital platforms are increasingly used globally to engage citizens[13][14]. By bringing these tools to Ethiopia's context with built-in safeguards against bots and hate, the platform promises to boost civic engagement, inform policy, and build public trust in citizen feedback.

5. Methodology

The methodology for developing the Ethiopian Public Opinion & Discussion Platform combines user-centered design, AI integration, and evidence-based research to ensure a secure, inclusive, and effective civic engagement tool. It follows a multi-phase approach:

5.1. User Research & Requirements Gathering

- **Stakeholder Interviews and Surveys:** Conduct in-depth interviews with youth, civic activists, policymakers, and other relevant stakeholders to identify civic engagement gaps, key issues, and desired platform features.
- **Literature Review:** Analyze existing digital engagement platforms (e.g., U-Report, Afrobarometer) and relevant civic-tech research to understand best practices, limitations, and opportunities for Ethiopia.
- **Contextual Research:** Investigate barriers to participation, including gendered digital divides, literacy levels, and regional disparities, referencing studies such as UNICEF (2020) and Internews (2023).

Outcome: A detailed set of user requirements, personas, and scenarios that will guide platform design and AI model development.

5.2. Platform Design (UI/UX)

- **User-Centered Design:** Employ iterative design principles, creating wireframes and interactive prototypes for feedback from target users.
- **Accessibility:** Ensure the interface is intuitive for users with varying literacy and technical skills, including multilingual support for major Ethiopian languages (Amharic, Oromo, Tigrinya).
- **Usability Testing:** Conduct task-based usability tests with pilot users to refine navigation, readability, and interaction flows.

how & what is the method you planned to implimet

Outcome: A prototype that is accessible, culturally appropriate, and optimized for engagement.

5.3. Development & AI Integration

- **Technology Stack:** Implement using an open-source web stack (Node.js/React or Python/Flask) for scalability and maintainability.
- **Core Features:** Anonymous polling, moderated discussion forums, user profiles, and demographic tagging without compromising privacy.
- **AI Modules (Current Scope):**
    - **Bot Detection:** Use anomaly detection and behavior scoring to identify suspicious accounts or coordinated activity.
    - **Poll Recommendations:** Collaborative filtering and demographic-based recommendation systems to reduce self-selection bias.
    - **Auto-Translation:** NLP-based translation across Ethiopia's major languages, leveraging existing libraries and research on Amharic-English translation (Nigusie et al., 2025).
- **AI Modules (Future Scope):** → Why not
    - **Demographic Testing:** Models to evaluate responses across demographic groups, providing richer insights while maintaining anonymity.
    - **Self-Selection Bias Mitigation:** AI models to detect and adjust for skewed trends from self-selected participants.
    - **Real-Time Sentiment Analysis:** NLP tools to analyze discussion sentiment and link insights to poll results.

5.4. Testing & Evaluation

- **Functional Testing:** Verify feature completeness and ensure polls, forums, and dashboards operate as intended.

- **Usability & Engagement Testing:** Measure user satisfaction, engagement rates, and platform comprehension using surveys and task-based tests.
- **Privacy & Security Assessment:** Evaluate encryption, anonymity safeguards, and compliance with data protection standards.
- **AI Evaluation:** Validate bot detection, recommendation algorithms, and translation accuracy using synthetic and real pilot data.
- **Load Testing:** Simulate concurrent users to ensure system stability and responsiveness.

5.5. Pilot Implementation & Feedback

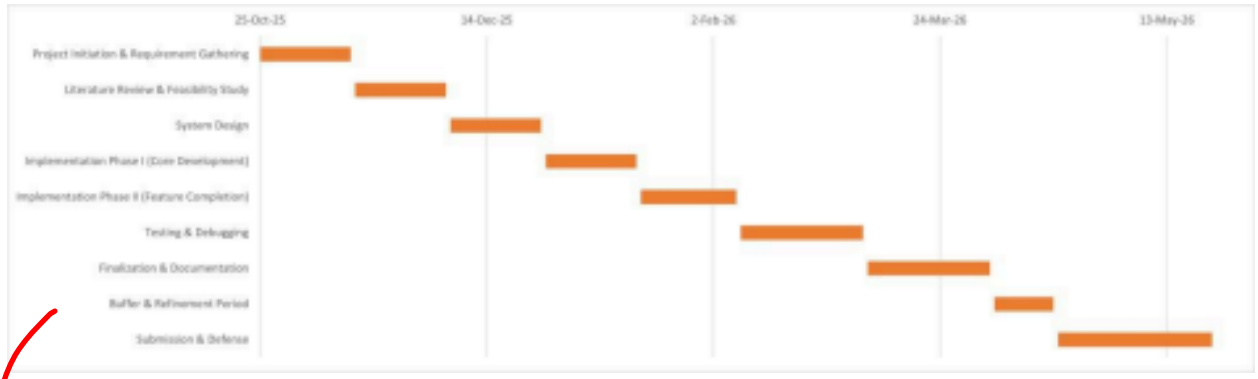
- **Pilot Cohort:** Recruit 500+ users from diverse demographic backgrounds for a defined pilot period.
- **Iterative Refinement:** Use surveys, focus groups, and platform analytics to continuously refine usability, AI accuracy, and engagement strategies.
- **Data Utility Assessment:** Evaluate anonymized datasets for usefulness to policymakers, NGOs, and researchers.

5.6. Research Integration & Knowledge Contribution

The methodology ensures that platform development is research-driven, incorporating findings from local studies (e.g., Internews, UNICEF) and global civic-tech research. By systematically documenting user interactions, engagement patterns, and AI performance, the project contributes to Ethiopia-specific knowledge on digital civic participation and AI-enhanced engagement.

***Outcome**:* A rigorously tested, research-informed, and AI-augmented civic engagement platform capable of generating actionable insights while fostering safe, inclusive public discourse.

6. Project Schedule



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References

- Ethiopian News Agency (2024). “Youth Digital Engagement Platform Launched in Ethiopia”[15][7].
- Internews (2023). “Ethiopian Digital Media Information Ecosystem Assessment”[1].
- UNICEF (2020). “Digital Civic Engagement by Young People”[2].
- Knight First Amendment Institute (2022). “The Algorithmic Management of Polarization and Violence on Social Media”[3][4].
- United Nations Development Programme – Ethiopia (2014). “Civic Engagement for Effective Service Delivery in Ethiopia”[5].
- Afrobarometer (2024). “Ethiopia: Round 9 Country Profile”[6].
- Translators Without Borders (2023). “Language Data for Ethiopia”[11].
- Nigusie, L. et al. (2025). “Exploring the evolution and future prospects of Amharic–English machine translation: a systematic review”. Frontiers in Artificial Intelligence[12].
- People Powered (2025). “Guide to Digital Participation Platforms”[13][14].
- GNET Research (2025). “Building Digital Trust: Youth-Led Tech Solutions to Prevent Extremism in the Horn of Africa”[16][17].
- Brennan Center for Justice (2023). “Artificial Intelligence, Participatory Democracy, and Responsive Government”[18][9].

[1] Ethiopian Digital Media Information Ecosystem Assessment - Information Saves Lives | Internews

https://internews.org/resource/ethiopian-digital-media-information-ecosystem-assessment/

[2] unicef.org

https://www.unicef.org/media/72436/file/Digital-civic-engagement-by-young-people-2020_4.pdf

[3] [4] The Algorithmic Management of Polarization and Violence on Social Media | Knight First Amendment Institute

https://knightcolumbia.org/content/the-algorithmic-management-of-polarization-and-violence-on-social-media

[5] Civic Engagement for Effective Service Delivery in Ethiopia:Tools, Opportunities and Challenges | United Nations Development Programme

https://www.undp.org/ethiopia/publications/civic-engagement-effective-service-delivery-ethiopiatools-opportunities-and-challenges

[6] Ethiopia – Afrobarometer

https://www.afrobarometer.org/countries/ethiopia/

[7] [8] [10] [15] Youth Digital Engagement Platform Launched in Ethiopia - ENA English - ENA

https://www.ena.et/web/eng/w/eng_4597550

[9] [18] Artificial Intelligence, Participatory Democracy, and Responsive Government | Brennan Center for Justice

https://www.brennancenter.org/our-work/research-reports/artificial-intelligence-participatory-democracy-and-responsive-government

[11] Language data for Ethiopia - Translators without Borders

https://translatorswithoutborders.org/language-data-for-ethiopia

[12] Frontiers | Exploring the evolution and future prospects of Amharic to English machine translation: a systematic review

https://www.frontiersin.org/journals/artificial-intelligence/articles/10.3389/frai.2025.1456245/full

[13] [14] Introduction to the Guide to Digital Participation Platforms — People Powered

https://www.peoplepowered.org/digital-guide-home

[16] [17] Building Digital Trust: Youth-Led Tech Solutions to Prevent Extremism in the Horn of Africa – GNET

https://gnet-research.org/2025/09/03/building-digital-trust-youth-led-tech-solutions-to-prevent-extremism-in-the-horn-of-africa/

did you really accessed all this resources?

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