Project Design Phase-II
Assessing the safety of municipal drinking water &user Stories

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Team ID	NM2023TMID19072
Project Name	Assessing the safety of municipal drinking water

Assessing the safety of municipal drinking water:

Background

In low resourced countries, water-associated diseases have still impact on public health. Poor quality of water can cause waterborne diseases through bacteria, viruses, protozoa, and parasites that has been responsible for millions of morbidity and mortality. Therefore, this study aimed to assess quality and safety of public municipal drinking water in Addis Ababa City.

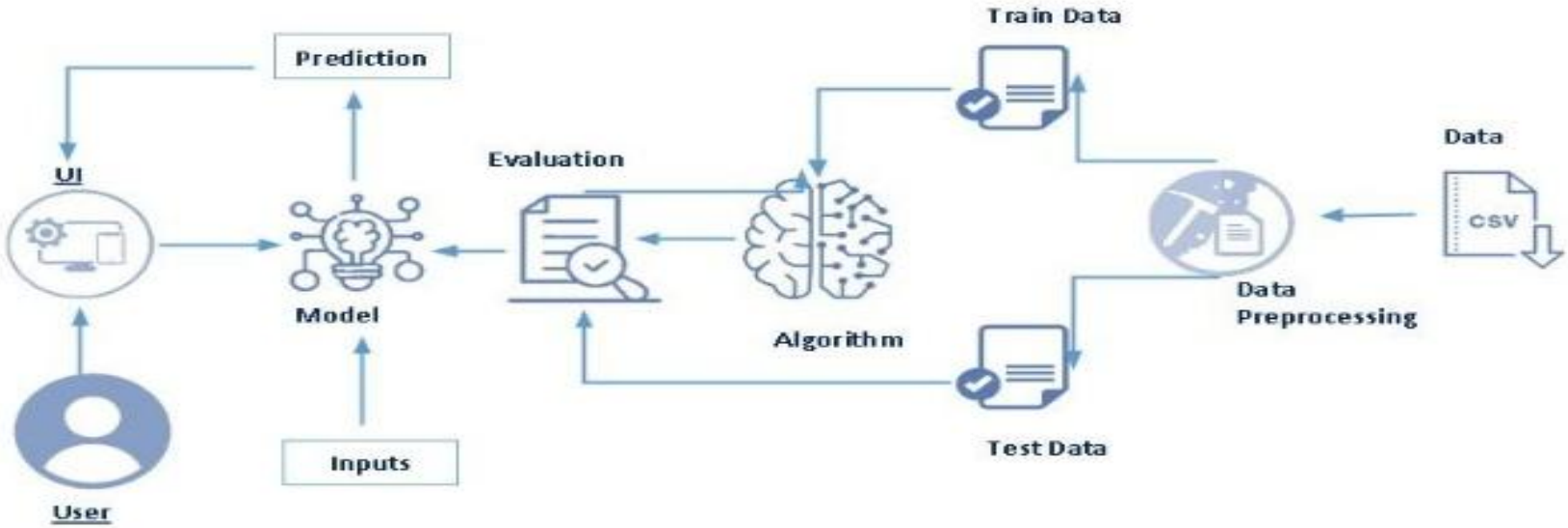
Methods

Descriptive epidemiological study design that used quantitative approach was carried out at Addis Ababa City Administration from June 2016 to October 2016. Pre-tested and standardized aseptic sample collection technique was utilized to collect a total of 2976 samples (2951 water samples for bacteriological analysis by Presence-Absence (P-A) culturing method and 25 samples for parasites identification through direct microscopy examination). Descriptive data were summarized and cleaned by the SPSS version 20 software and presented in table and graph.

Results

The study revealed that 10%, 7% and 3% were positive for bacteriological, total coliforms, and fecal coliforms respectively through Presence-Absence Broth test. The bacterial distribution trends from 1st to 13th weeks of wet season were slight increment of total coliforms and slight decrement for fecal coliforms. All tested for parasitological samples from selected reservoirs were free from parasitological species.

Example diagram:


Train Data
Prediction
Data
UI
Evaluation
CSV
Data
Preprocessing
Model
Algorithm
Test Data
Inputs
User


FRAMEWORK FOR SAFE DRINKING-WATER
1. Health-based targets
Public health context and health outcomes
2. Water Safety Plan
i. System assessment
ii. Monitoring
iii. Management and Communication
3. Surveillance

Water Supply System Components	Step of Process (units)	Events of Hazard	Type of Emerging Hazard	Frequency of Occurrence	Degrees of Severity	Risk Value	Degrees of Risk	Description
A. Source	Upper water reservoir	Space between reservoir and lid	Contamination	5	5	25	Very high	Dust and animal waste contain bacteria into water reservoir (through space) contaminate water
	Upper water reservoir	Never drained	Dirty (moss and sandy)	5	3	15	High	Reservoir without drained, moss thrives, those being impurity
B. Process	No water treatment	Proliferation of bacterial	Total coliform exceeds standard	5	5	25	Very high	-
C. Distribution	Distribution pipe	Submerged, no leakage	Potential contamination	5	1	5	Low	The distribution pipe was submerged but no leaking, so that the contamination might not happen
D. Costumer/ Household connection	Water meter	Submerged, seepage	Potential bacterial contamination	5	5	25	Very high	Tidal water, gutter and land contain many pathogen. When the water meter submerged, the pathogen may infiltrate.
	Water	Source (wells) and distribution pipe was dirty	Dirt	5	3	15	High	Dirt at distribution pipe and source (wells) was delivered to customer