

PRAGMA 39 Student Workshop

Study of Noise Pollution and Human Perception

a Noise Mapping in a University Campus



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What do you hear in a day ?

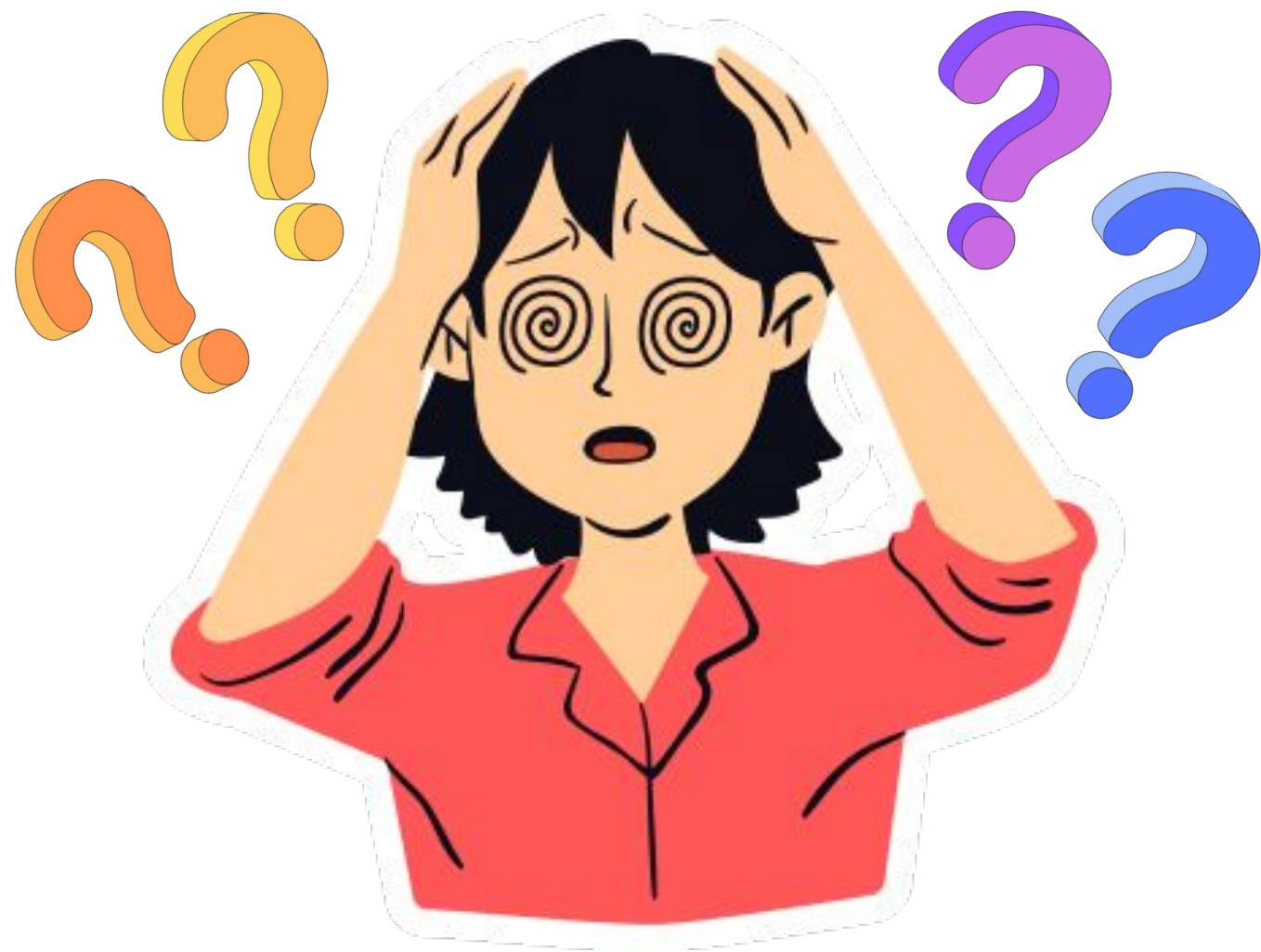


How does sound affect
our health ?



85 dBA or above

Effects of noise pollution on human health and well-being



Impact on mental health

- Hearing Loss
- High blood pressure
- Heart disease
- Sleep disturbances
- Stress



Objectives



Design and implement a tool that can collect the required information for real-time analysis-capable data



Visualize the data on a map to show where noise pollution occurs and how much noise pollution students endure on a daily basis.



Methodology and Data Collection



Traditional methods

manual recording of noise level

This approach does not offer a thorough investigation of noise pollution or real-time data analysis.



sound level meters

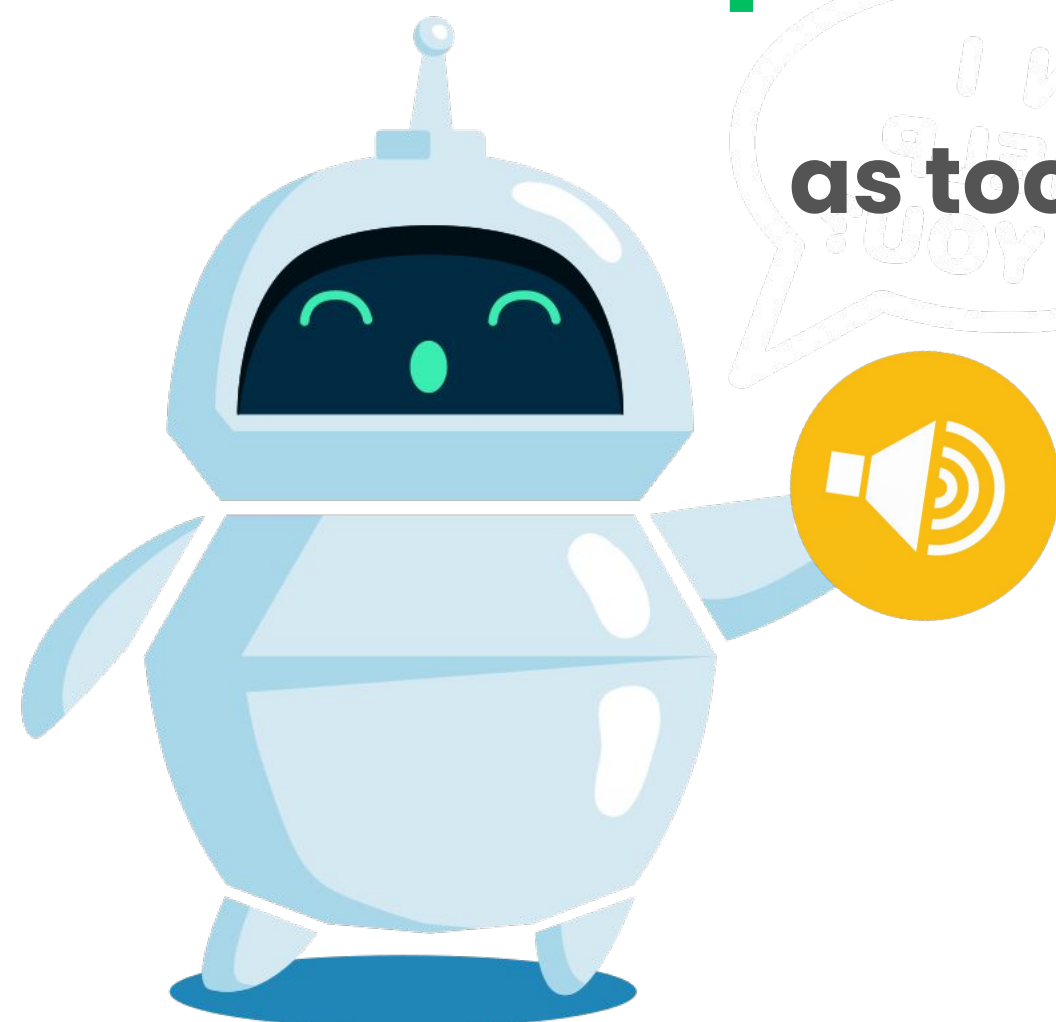
although the data may be accurate and precise but have high costs and cannot record other relevant data that affects individuals' health and perception of disturbance.



Methodology

LINE CHATBOT & Noise Capture Application

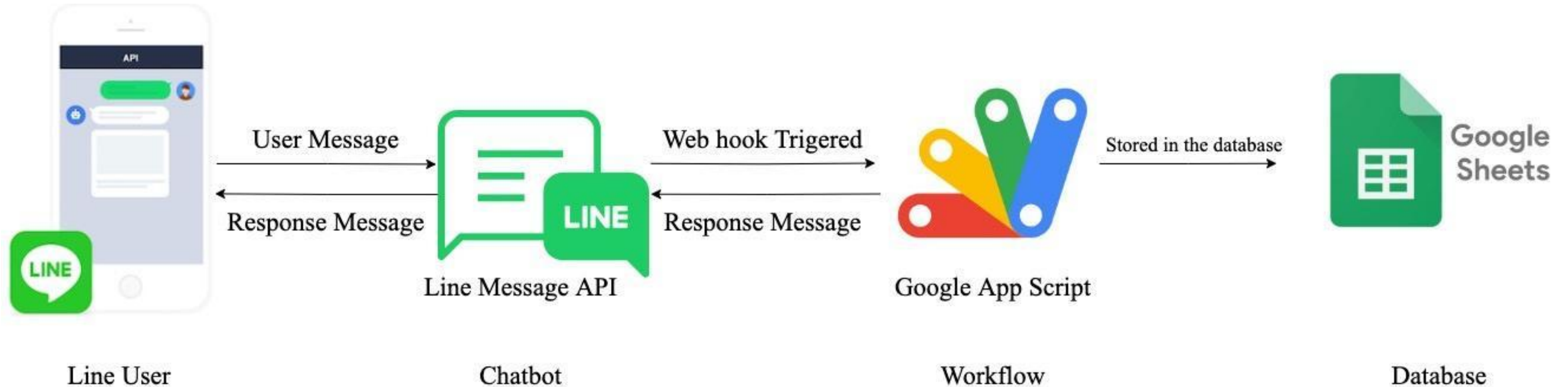
as tools to collect data related to sound



Overview of techniques in use

LINE CHATBOT

development utilizes LINE APIs to access text messages and employs Google App Script to control the workflow.



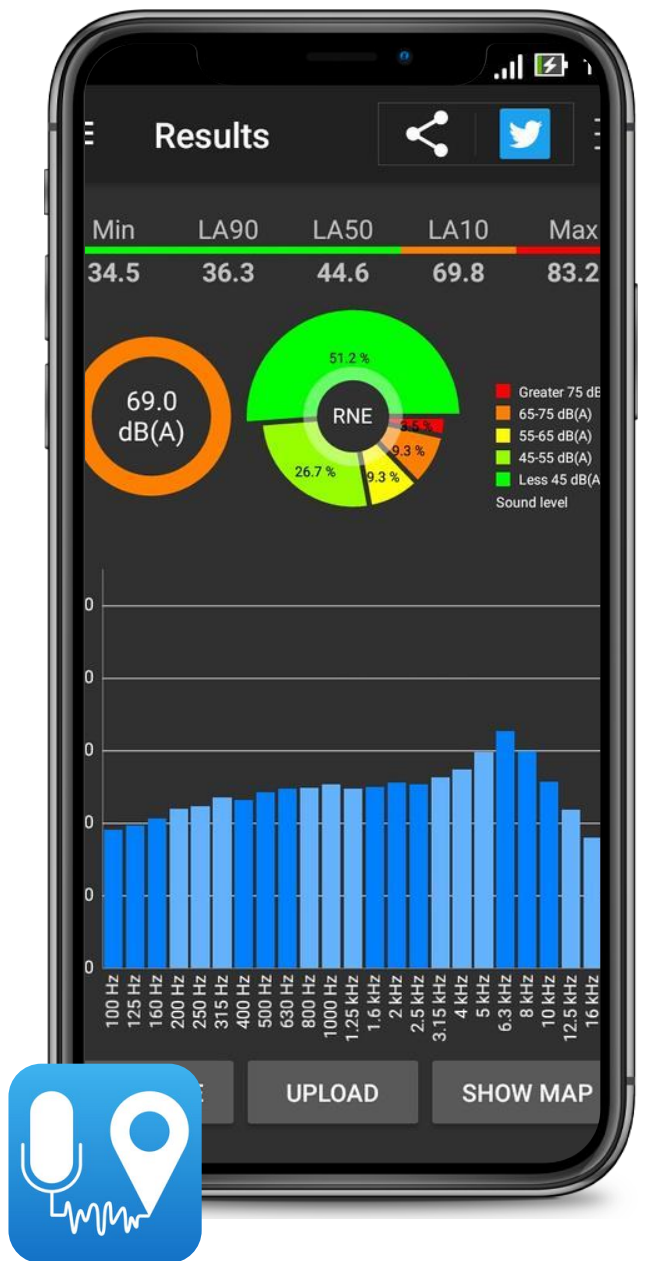
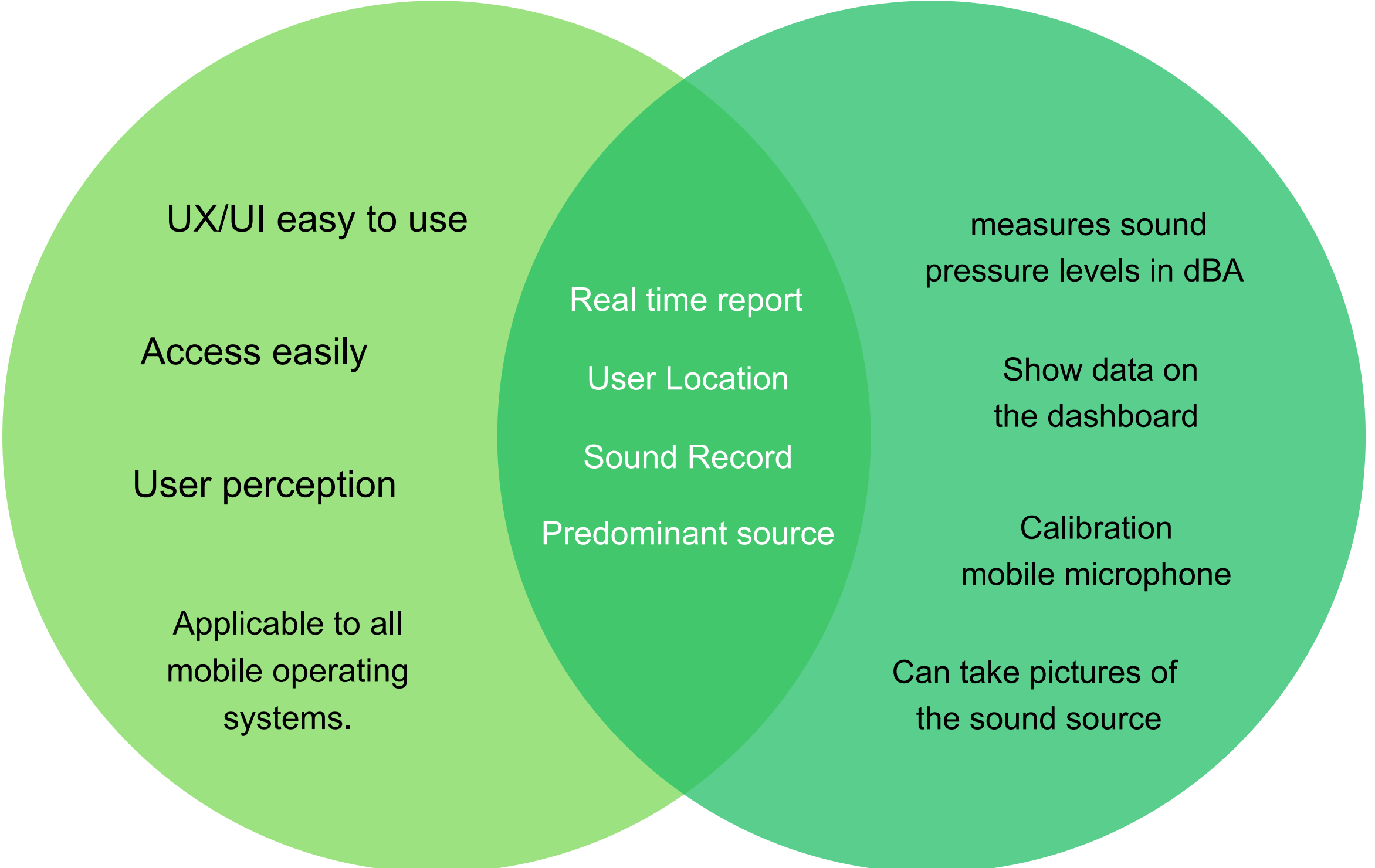
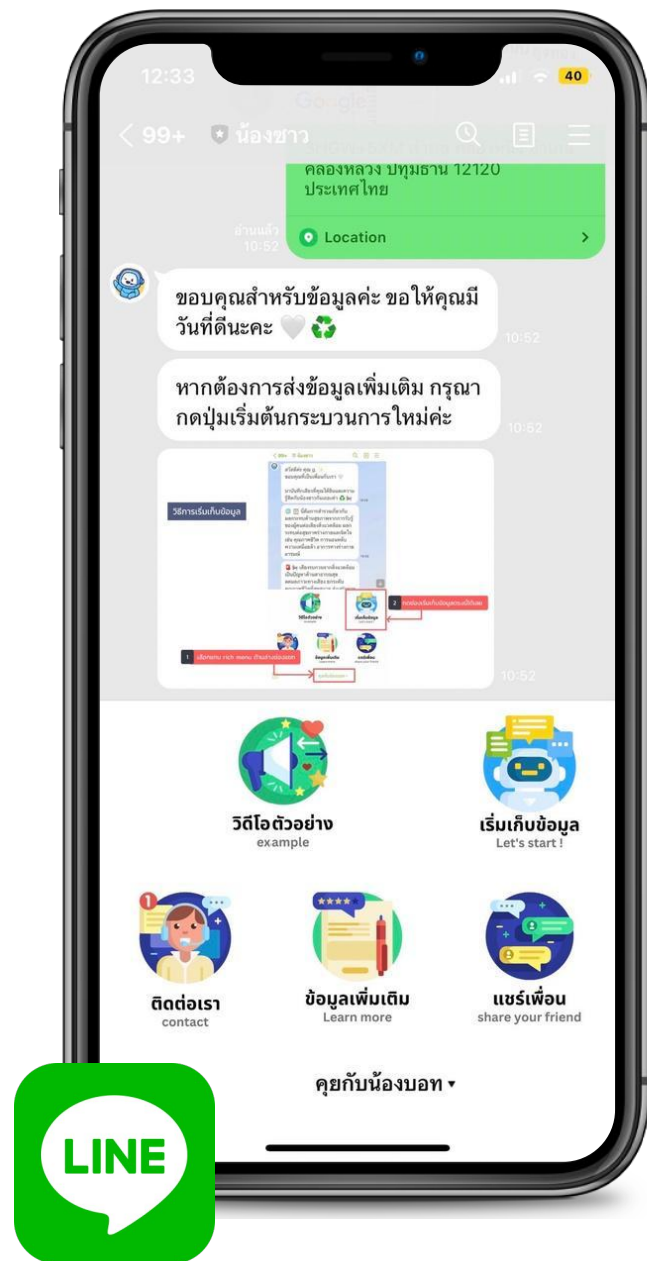
Overview of techniques in use

NOISE CAPTURE APPLICATION

Additionally, data is collected in collaboration with the Noise Capture Application, an app that measures sound pressure levels in decibels (dBA).

**so the collected data is categorized into two formats:
quantitative data, which includes sound level values (in dBA)
and 1/3 octave band frequency information and qualitative
data, which allows users to describe and record the
characteristics, types, locations, and times of disturbing
sounds**





User Location, User perception

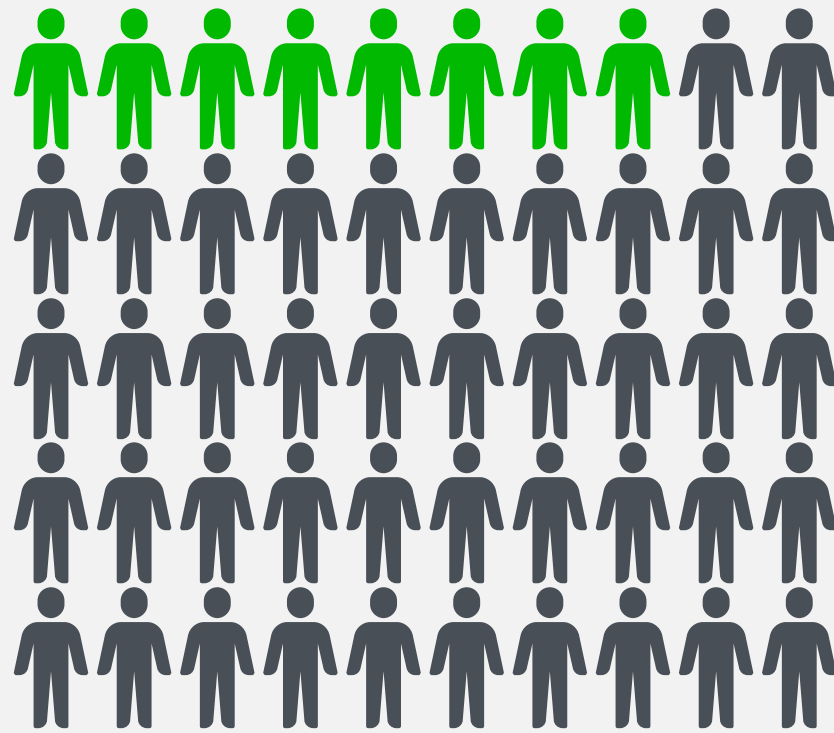
Sound Record, Predominant source

Data collection



The initial experiment involved using the LINE chatbot with a group of 8 students voluntary within the university area to report their experiences and provide information about the sounds they encountered. The experiment is conducted for 9 hours per day.

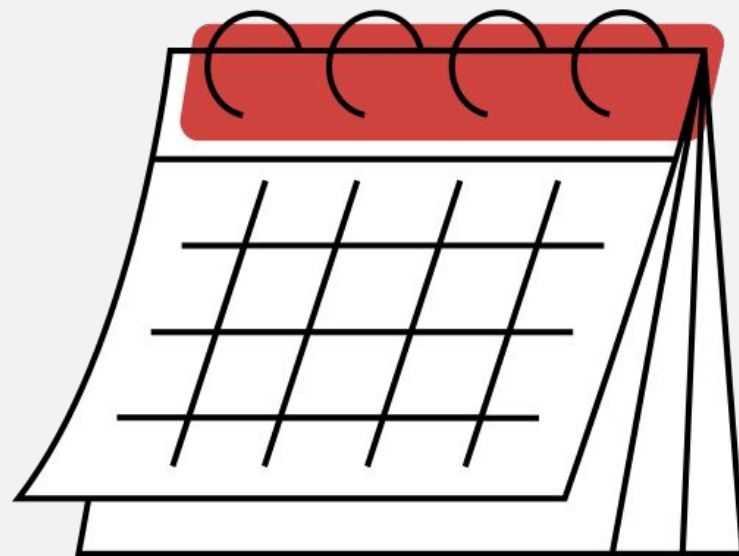




8 students voluntary



8:30 AM to 18:00 PM



1 Month



76 record



Analysis Goals

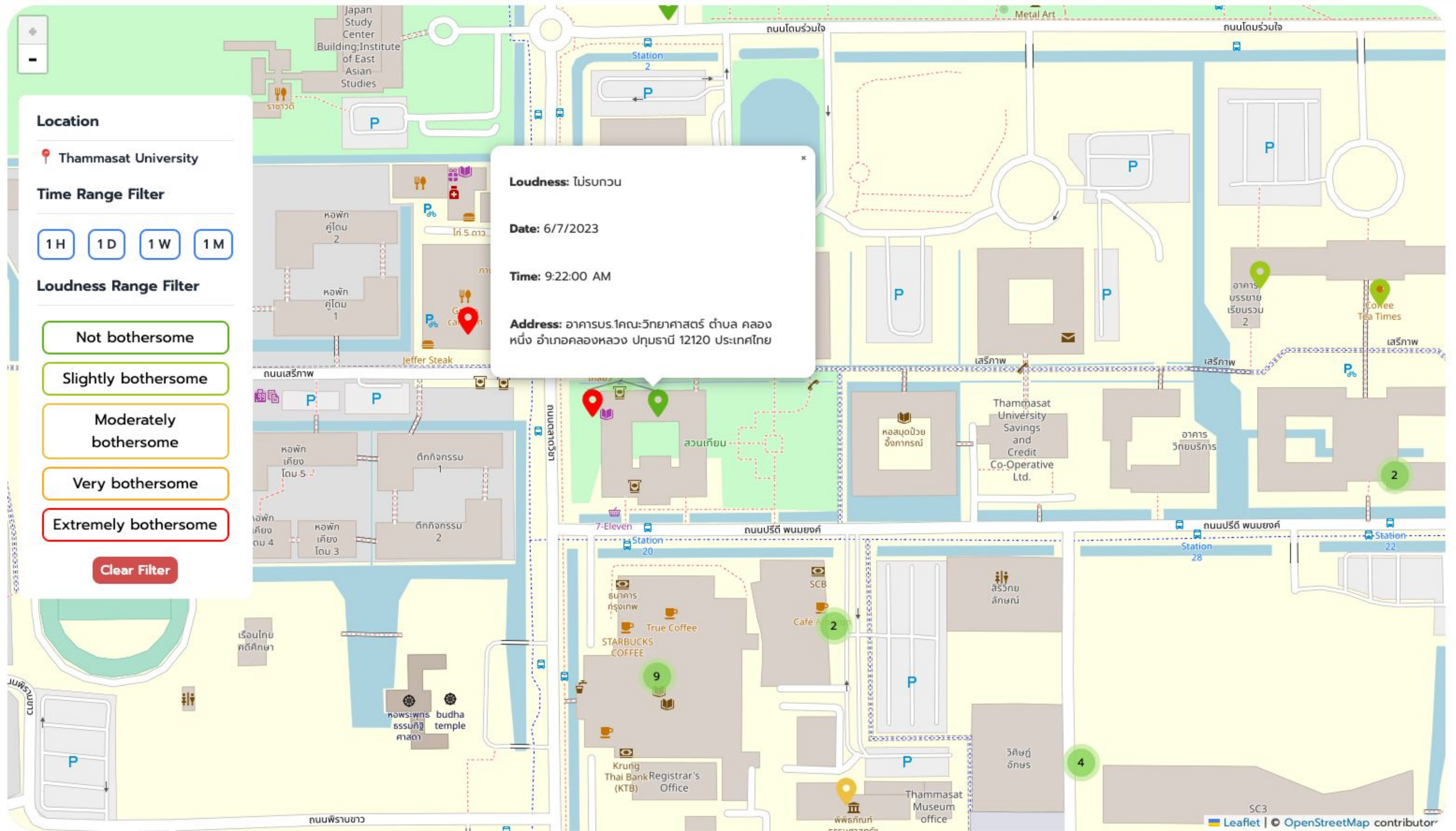
The expected outcome of this research is a reliable dataset concerning the sources of sound and the real-life impact of noise pollution, which can be analyzed to develop effective measures to mitigate and address the issue.

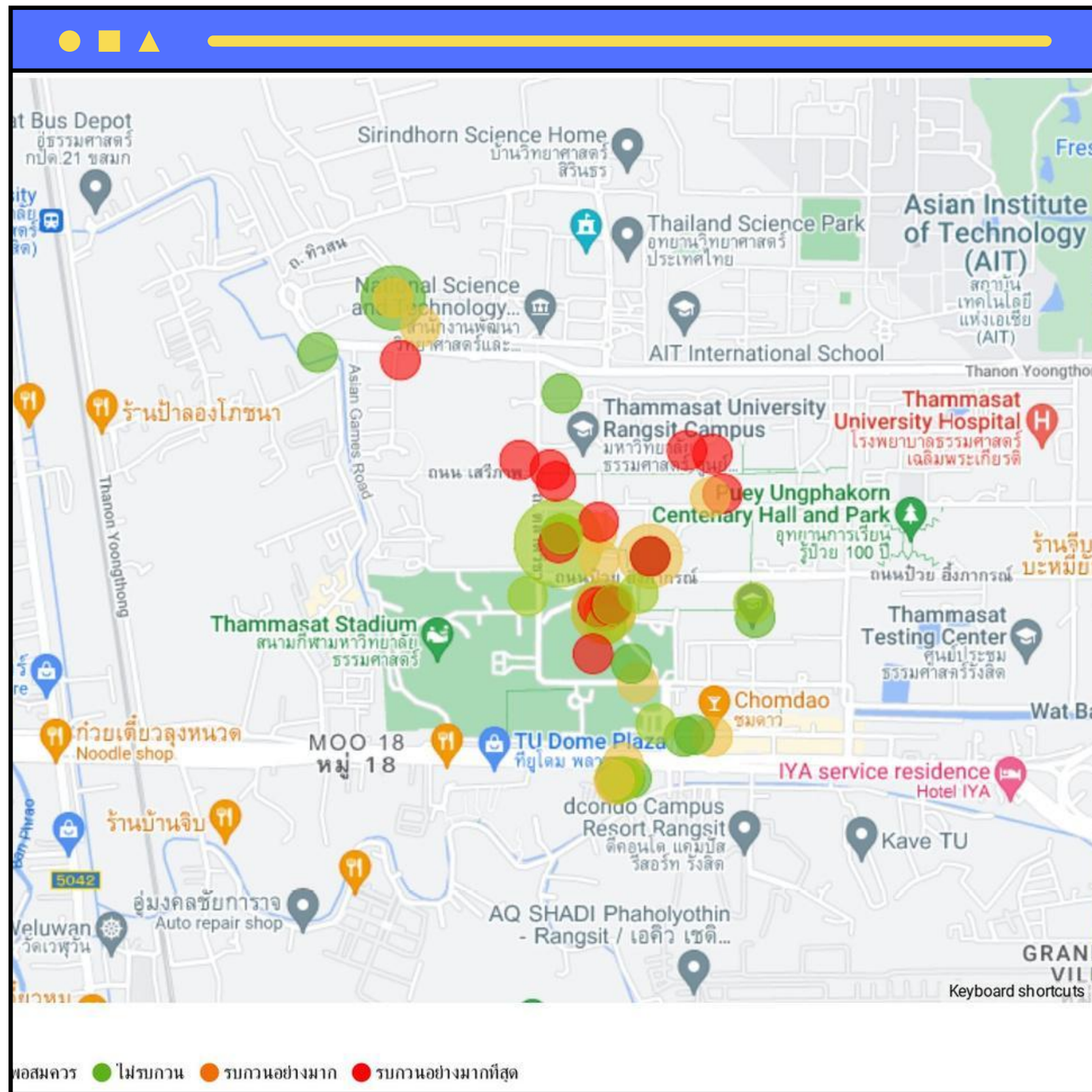
Visualization

The data collected via line chatbot can be visualized on a map, indicating the areas where noise pollution occurred.



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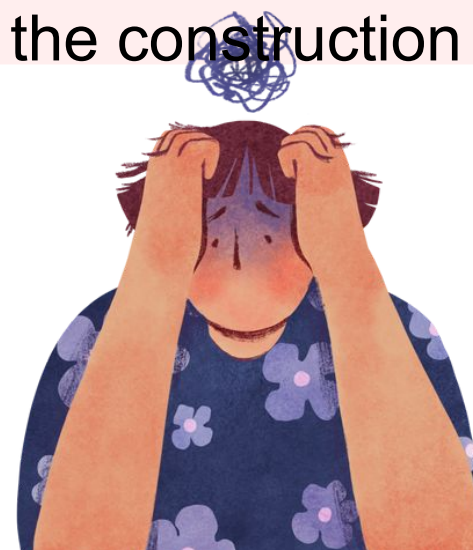


Analysis Summary

highest
noise level

the morning hours
specifically between
9:00 AM and 10:00 AM
The loudest area

- classroom
- The area next to
the main road
- the construction zone



Lowest
noise level

the evening hours
specifically between
5:00 PM and 6:00 PM
the quietest area
library and
dormitory area.



A woman in a white lab coat is smiling and working at a desk. She is holding a pen and pointing at a document that has a bar chart and a calculator on it. The background is slightly blurred, showing a white wall and a white telephone cord.

Conclusion

In conclusion, we successfully achieved our goals by creating a tool to collect data and a map-based visualization system. Our tool gathered real-time data for analysis, while the map showed where and how much noise pollution students experience daily. This project has helped us understand noise pollution patterns and its impact on students' lives.

Future Work

This research will contribute to the development of risk reduction measures and strategies to address the consequences of noise pollution. Ultimately, it aims to create a conducive learning environment for students and improve the overall quality of the university's internal environment.



KEEP THE NOISE
DOWN OR THE NOISE
WILL
KEEP YOU DOWN

