Group #S18-39

Hearing Aid App based on Sound Classification

Adviosr: Yingying Chen

Team Members:
Ke Xia(POC), Song Yang, Tong Wu, Xin Yang

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

Scope of Work

Goal:

- Recognizing events happened around by sound
- Sending alert if something dangerous happended
- Helping people with hearing issues

Final Result:

- An Android App with web server

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

Scope of Work

Task Allocation:

Xin Yang: neural network training

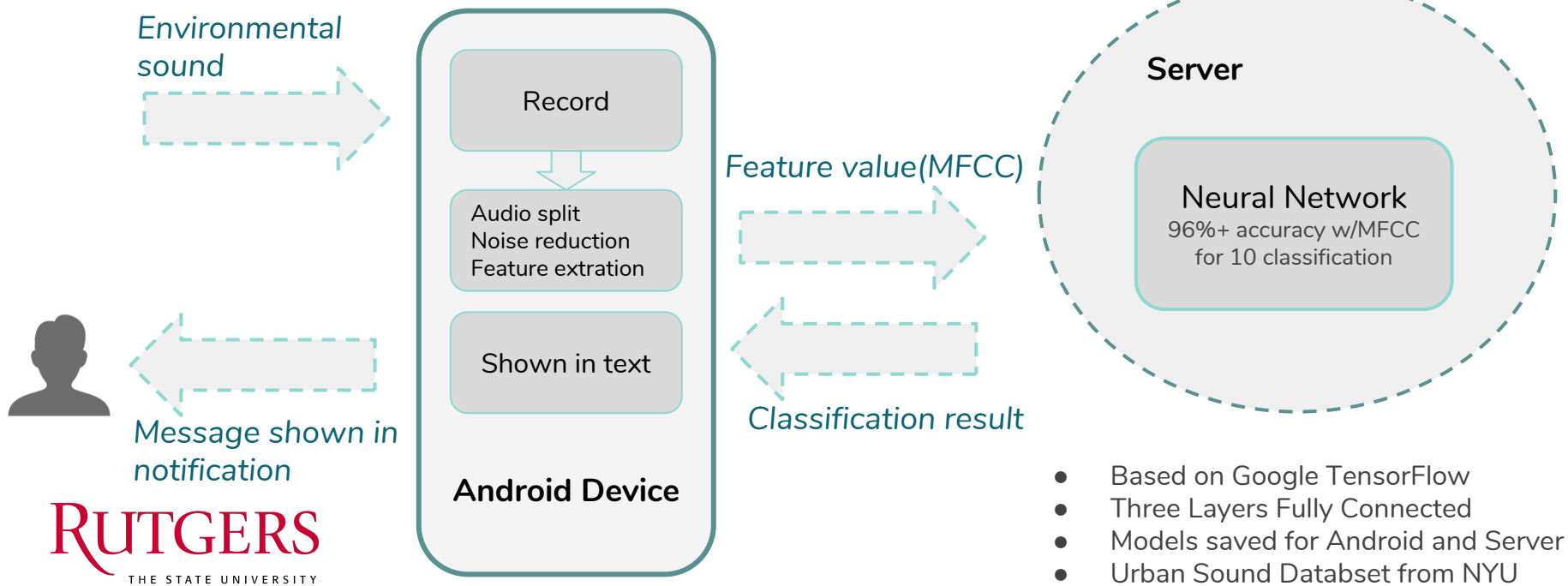
Song Yang: Cloud server building

Tong Wu: Noise reduction and feature extraction

Ke Xia: App UI design and developement

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

Project Implementation & Performance



- Based on Google TensorFlow
- Three Layers Fully Connected
- Models saved for Android and Server
- Urban Sound Databset from NYU

RUTGERS
THE STATE UNIVERSITY OF NEW JERSEY

Project Status - Progress & Challenges

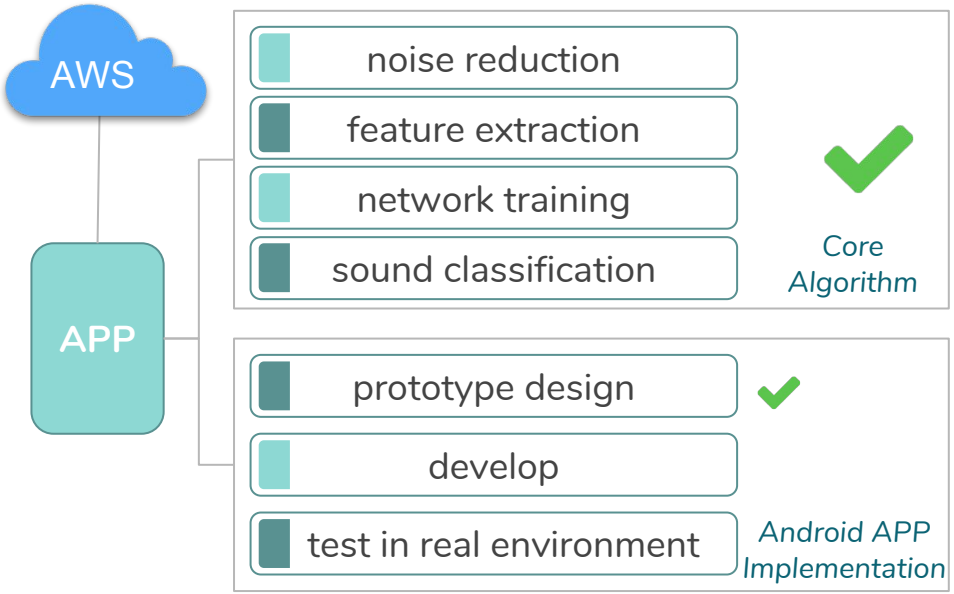
Challenges:

Classification accuracy

Our audio source comes from the environment, many kinds of sounds will be recorded and it's difficult to classify them accurately.

Realtime Classification

Users expect to receive the classified result as soon as possible, it's a big challenge to our project.



RUTGERS
THE STATE UNIVERSITY OF NEW JERSEY

Project Tasks and Milestone

Mar. 20th

Build the training model and Finish network training part.

Mar. 25th

Finish audio noise reduction and feature extraction part.

Apr. 7th

Finish App prototype development. Server should be built.

Apr. 15th

Test our app in real environment and enhance the classification accuracy.

Apr. 25th

Finish the final report.

RUTGERS
THE STATE UNIVERSITY OF NEW JERSEY

Costs

Only the cloud service will generate cost in our project.

prototype costs

Now we build the server on our own PC, so the cost of our prototype is zero.

project expenses

We decide to transplant the classification model to AWS so that users may get the classification results much faster and the storage of our App can be reduced. More importantly, save battery life.

estimated cost of mass production

The cost of mass production depends on the number of users and we still cannot estimate.