Embedded **Weather Prediction** and **Travel Advice** System based on HUAWEI CLOUD CNN-LSTM and Arduino

Team 14 – Involution

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[SWS3009 - Advance Proposal]

Advance Model: Overview

- A system can real-time:
  - Collect weather data at all times
  - Process requests
  - Weather forecasts
  - Travel advise
  - Clothing guidelines
  - Car wash advice

Data collecting and Model training

real-time interacting

Sensors → WeMos → Raspberry Pi

request
response

WeM

Data | Weather forcast Dressing Advice

Web server

Data | Model

Computers
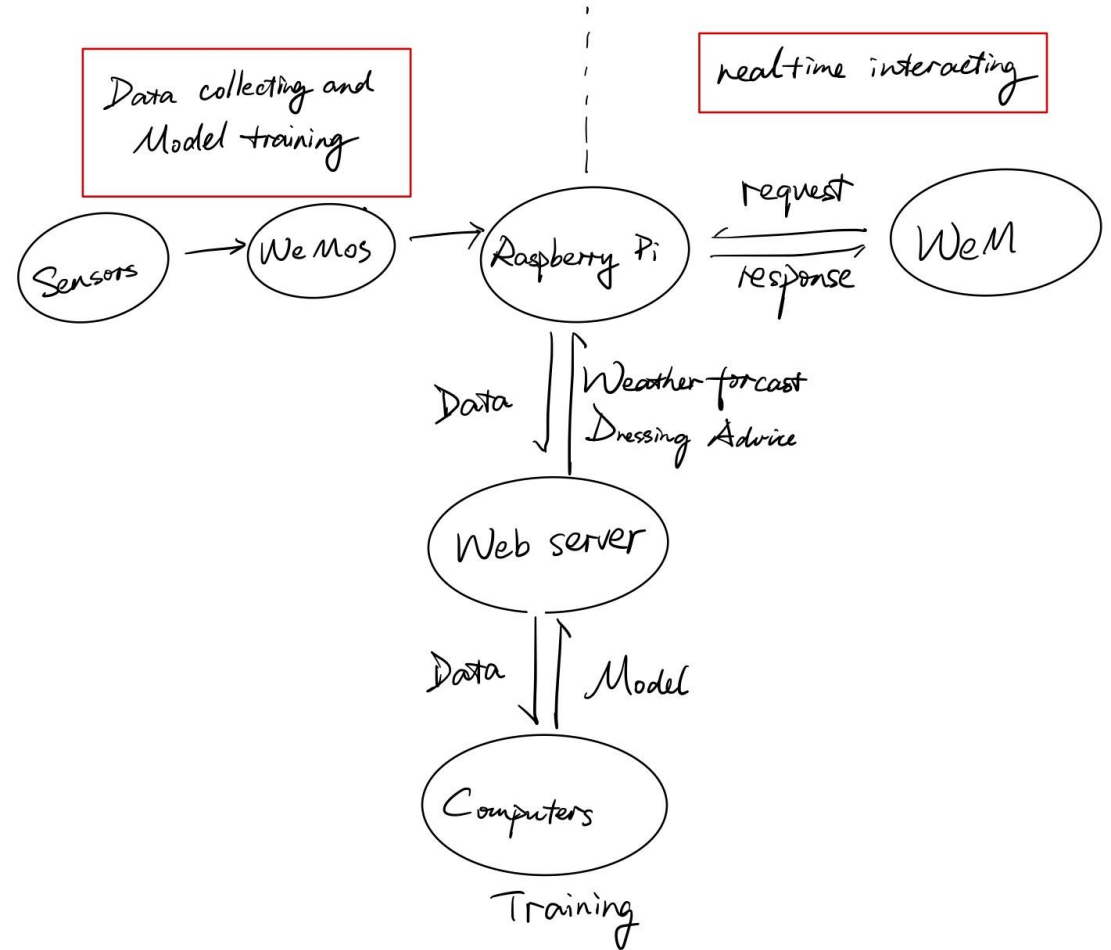
Training

Deep Learning: Key Info

- **Model:** CNN + DNN -> LSTM
- **Input:**
  - humidity, temperature, soil moisture
  - sky image
- **Output:** weather (Cloudy/Rainy/Sunny)
- **Upload** trained model to HUAWEI Cloud Server and do real-time prediction when requested
- **Update** model occasionally
- **Accuracy:** 99.35%
  - (Baseline —— 87%, binary classification)
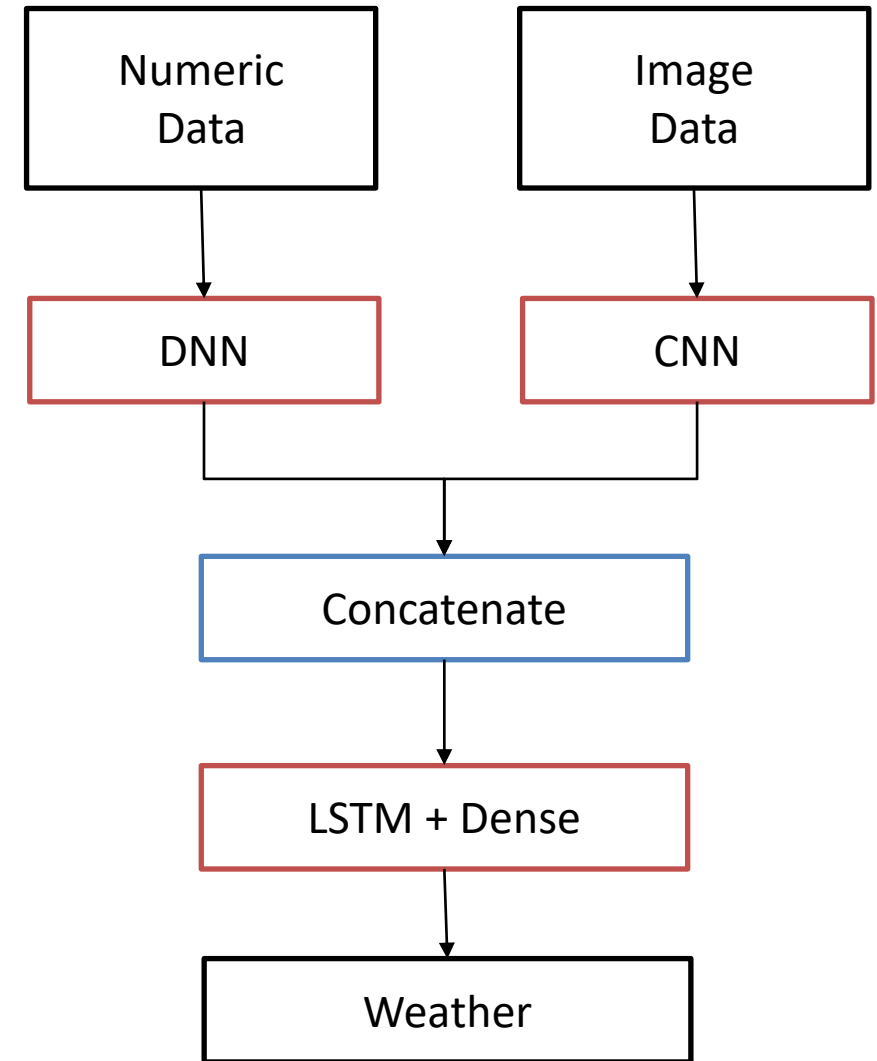
```
Epoch 4/5
20/20 [==============================] - 82s 4s/step - loss: 0.0898 - accuracy: 0.9815 - val_loss: 0.0372 - val_accuracy: 0.9935
```

Embedded System: Key Info

- DHT, Soil moisture sensors, LCD display, Buttons, Camera
- Backend:
  - Store data for training DL model
  - Running model for real-time response
- Communication
  - Http/Html