

Facial Expression Recognition

--- SWS3004

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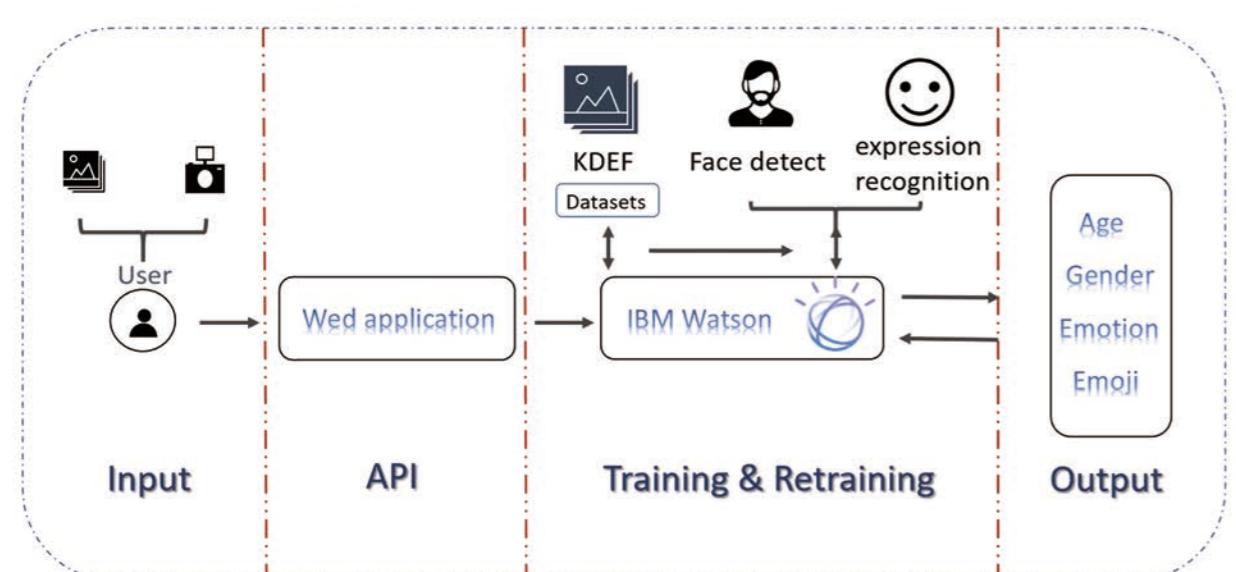
INTRODUCTION

Motivation

An emoji says a thousand words, which means emoji contains more information than words. Emojis play a role in text messaging just like the tone of a phone call or the gesture of a face to face exchange. We are going to show the result of facial expression recognition with an emoji in order to have a more intuitive and interesting effect.

APPROACH

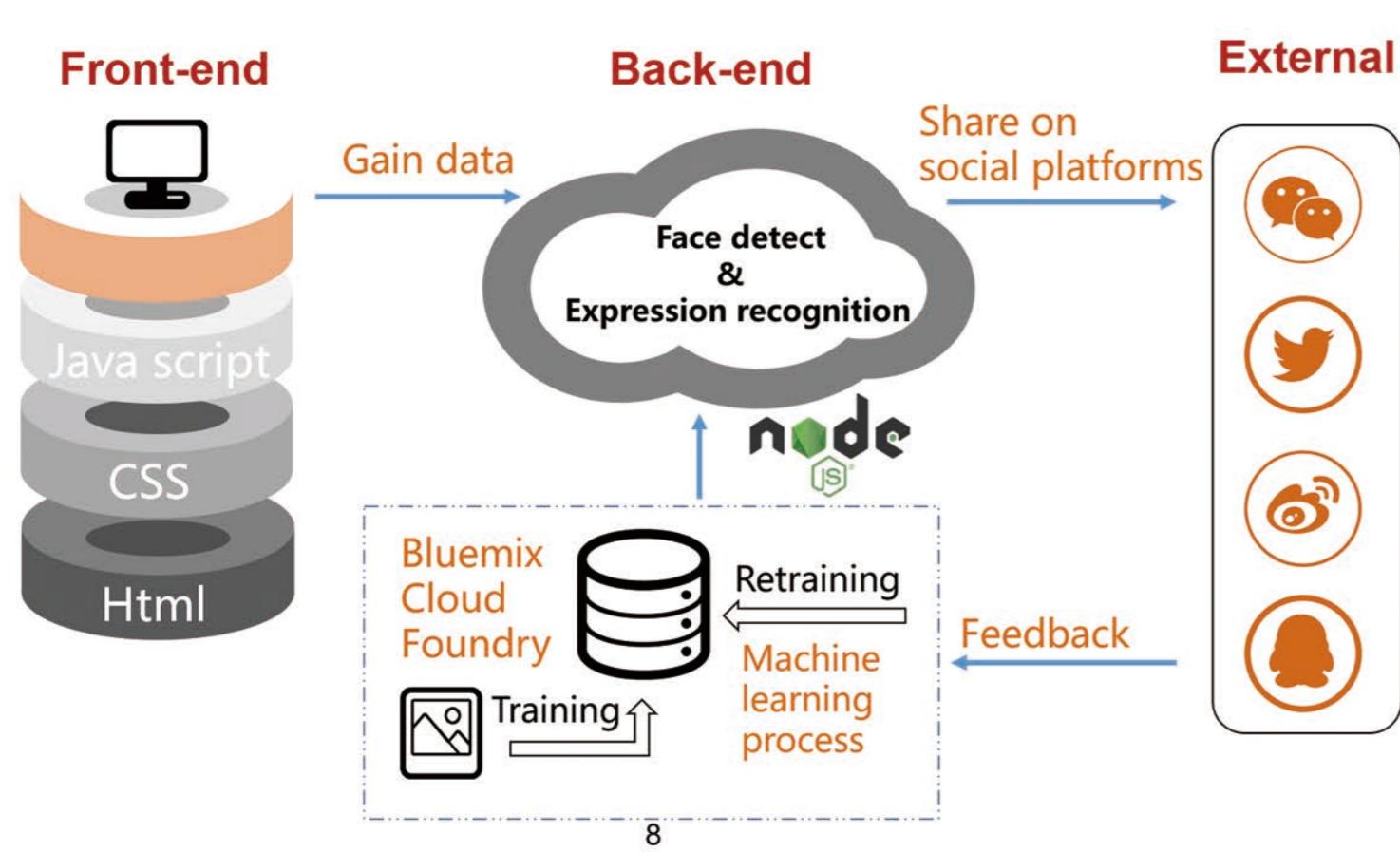
Overall Design



1. Obtain pictures - use camera to take a photo or upload a picture.
2. Detect face & expression - use the model which is trained by dataset of KDEF with almost two thousand photos.
3. Match - match a corresponding emoji according to the detected facial expression and show the result in the web application.
4. Share - share to social media such as Wechat or Twitter if you like.

IMPLEMENTATION

Architecture



CONCLUSION

Lessons

1. Have learned more about cloud computing, including its concepts, models, technologies and its application with big data.
2. Have learned how to implement the interaction between front-end and back-end with Node.js.
3. Have learned how to use the service from IBM cloud and push our web-based big data application to cloud.
4. Have learned how to work as a team.

Objective

User can use camera to capture children's facial features in real time, and analysis the emotion behind their expression. The results of the detected expression will be fed back to users with a corresponding emoji and other more interesting animations. It can be used not only as a small game for children to play funny videos or music to please themselves, but also as a tool for parents to take care of their children. Parents can adjust their care status according to their children's mood.

Development Tools

Cloud Platform -IBM Bluemix

Built as a SaaS application

Laid on top of PaaS

IBM DB2

Languages Used

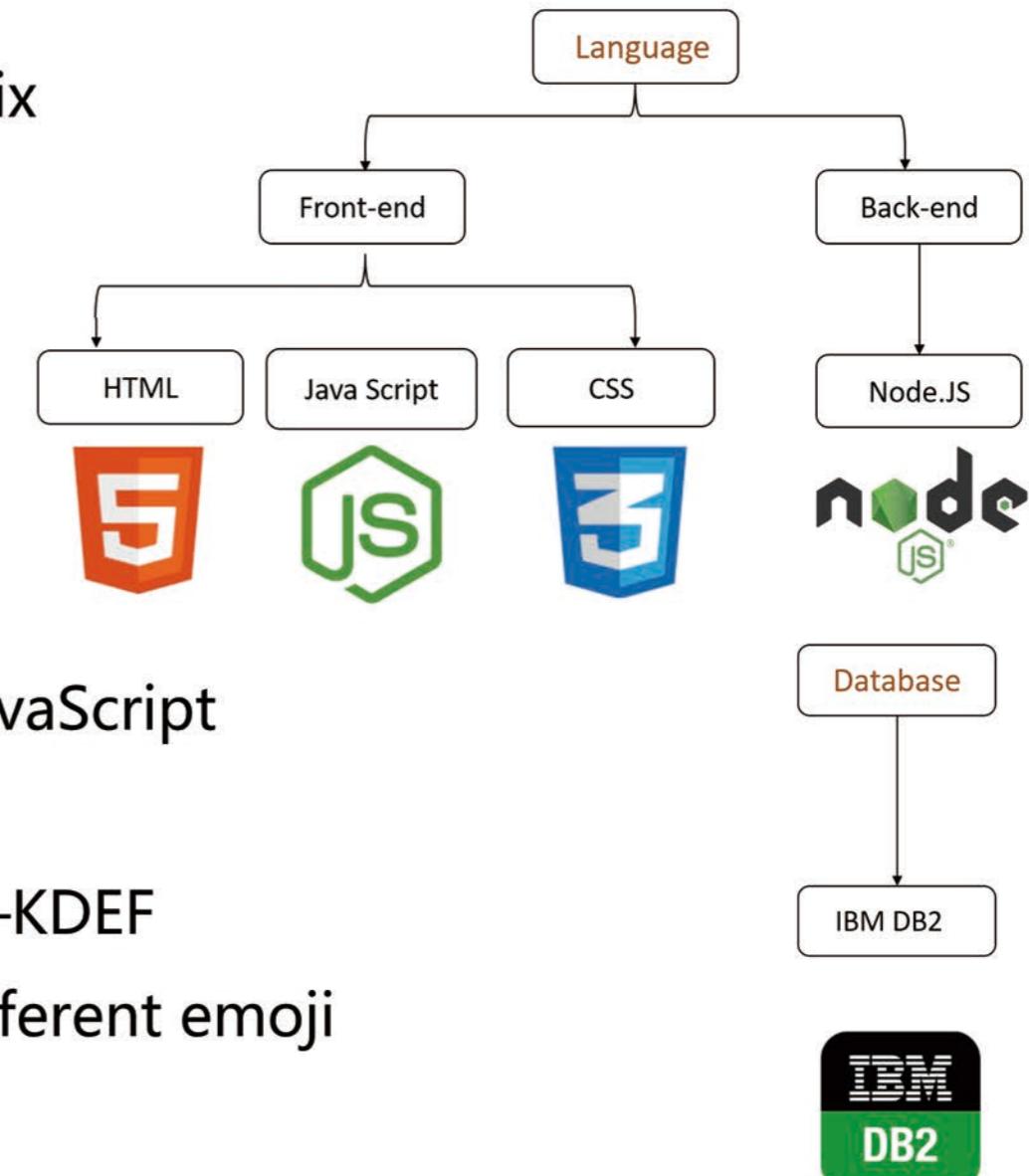
Back-end – Node.js

Front-end –HTML, CSS, JavaScript

Datasets Used

Face recognition dataset –KDEF

Emoji dataset contains different emoji



Use Cases

This application can also be used in many different situations. For example, doctors can judge patients' physical state according to their detected facial expression and conduct corresponding medical treatment in real-time.

Shopping malls can capture images of customers through cameras and analyze their facial expressions, and further interpret customers' emotional information, so as to analyze customers' experience satisfaction in shopping malls.

Music website can recommend different styles of music according to users' real-time mood.

More functions will be found in the future.



Mental Health



Business & Ads



Intelligent Voice System

Shortcomings&Improvements

1. Datasets we used are limited, so the accuracy of identification results will not be pretty high, maybe we can use bigger datasets which contain more features and images to train our model, bigger and richer datasets will be helpful to obtain better results.
2. IBM cloud services are unstable sometimes and the website may be interrupted.
3. The functions of our web application are monotonous and limited, maybe more interesting functions will be added later.