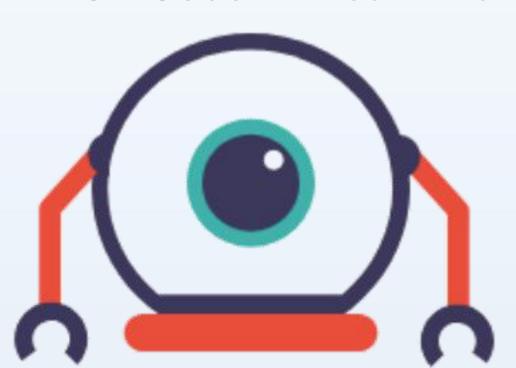
ASSESS



Audience facial reSponSE SyStem Yang Yifei, Yang Chengran, Xie Jiahang, Yang Liying



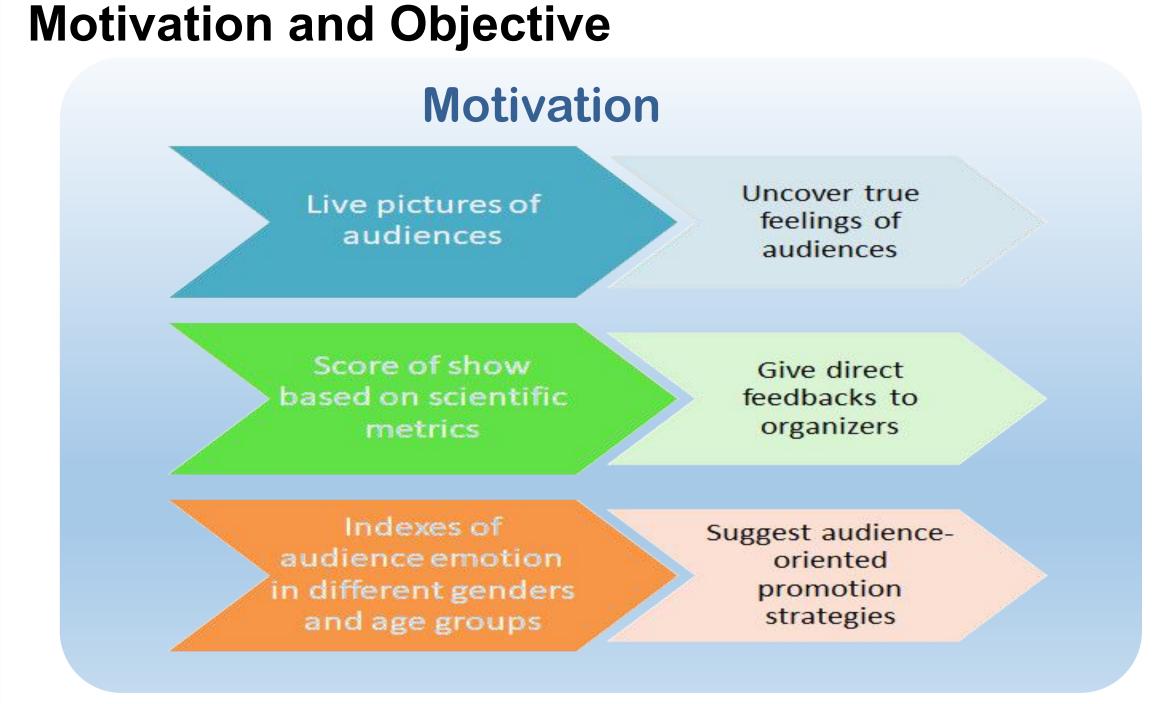








ASSESS



Objective

- Judge the quality of performance by recognizing the facial expressions of the audience.
- Analyze the target audience by age and gender recognition.
- Scope of project:
 - Emotion:happy,sad,surprised,neutral
 - Show:comedy,touching lecture,magic show

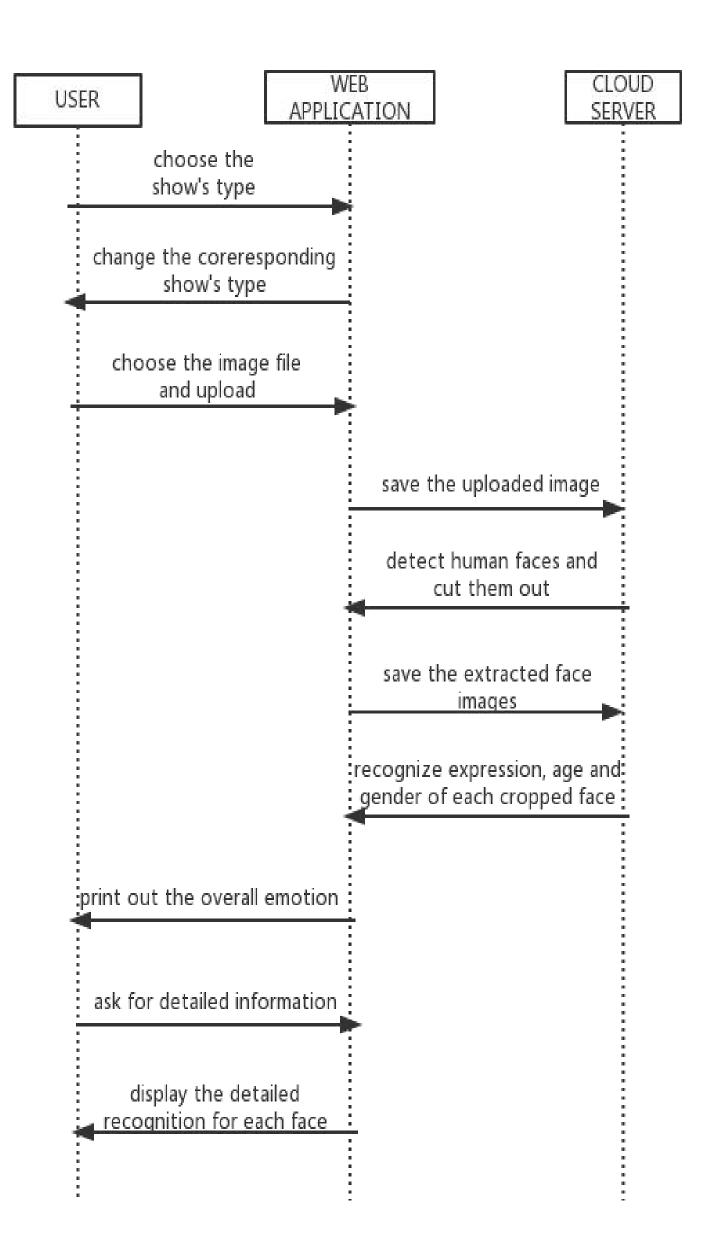
Approach

Workflow of ASSESS

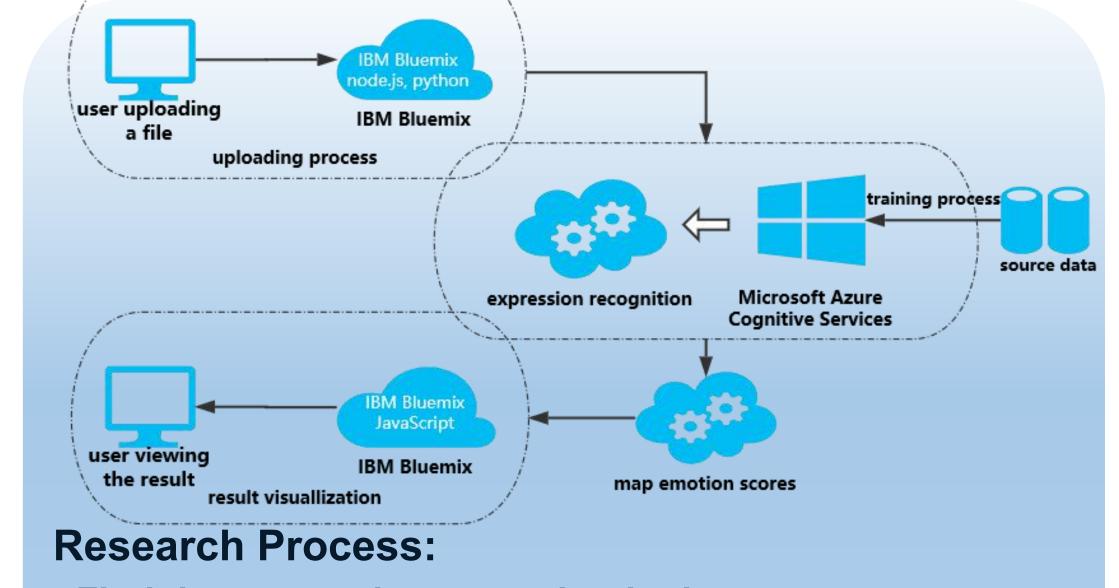
- Input pictures taken every (e.g.)1 minutes during performance
- Cut out faces from an image with multiple faces
- Individual expression recognition
- Mapping emotion scores to final result
- Combine results using our metrics to get a conclusion

Statistical Visualization

- Statistical analysis:
 - Different evaluating metrics for various kinds of performance
 - Reflect overall score of the show
 - indivual emotion percentage,age,gender
- Assess the show&Decide target audiences



Implementation



 Find the proper dataset and train the custom model in Microsoft Azure(precision:about 50%)

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 Write the python script for locating the coordinates and range of faces and cutting them out of the group photos



 Artificially sifting the photo set and retrain the model(precision:about 90%)

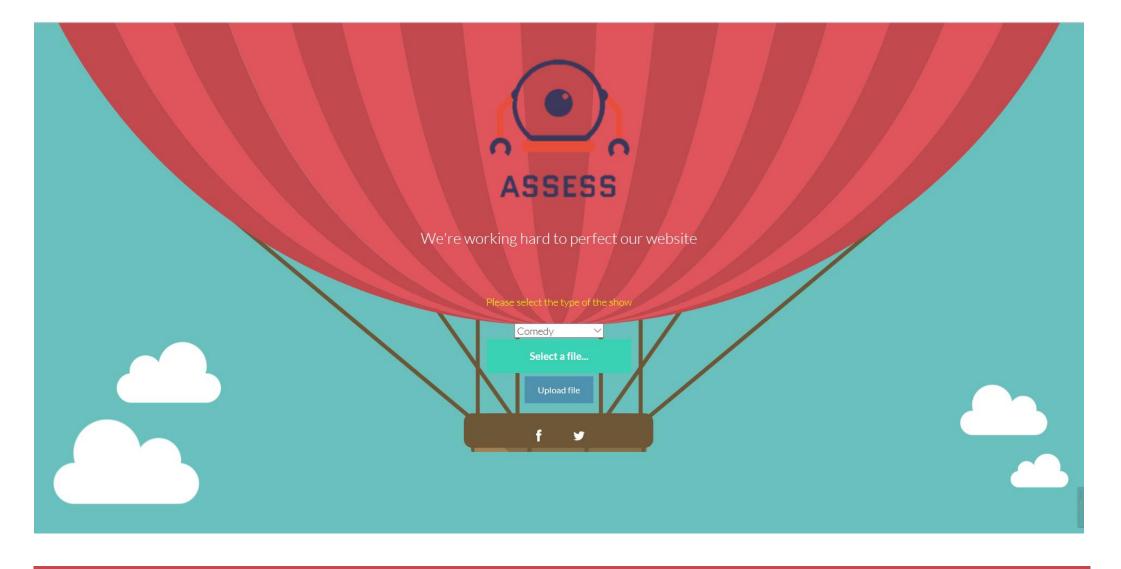
Performance Per Tag			Performance Per Tag	
Тад	Precision ^			
surprised	56.7%		Tag	Precision
disgusted	50.2%		surprised	96.9%
happy	40.5%	\longrightarrow	happy	95.2%
sad	33.9%		neutral	80.2%
neutral	30.3%		noata.	
angry	28.8%		sad	58.3%
scared	26.7%			

- Calling Watson's API of age and gender recognition
- Calling the model we trained for indivitual emotion
- Define metrics to map the individual scores to the overall result
- Deploy the project on the bluemix

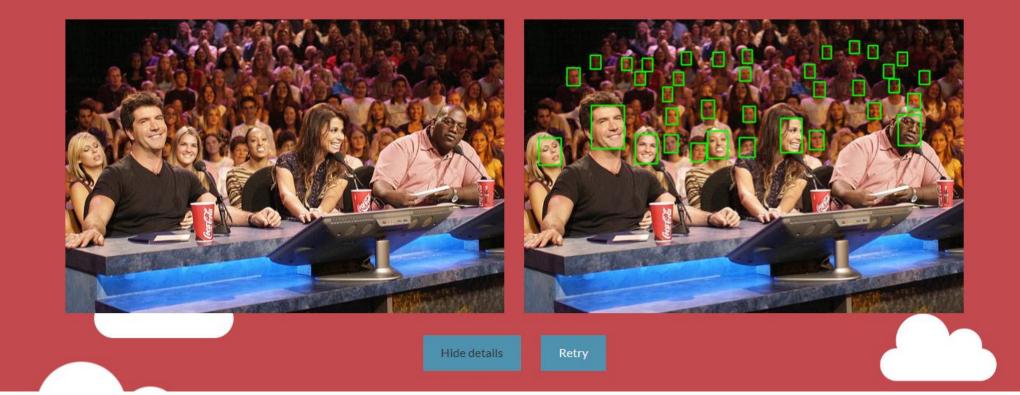
Criteria

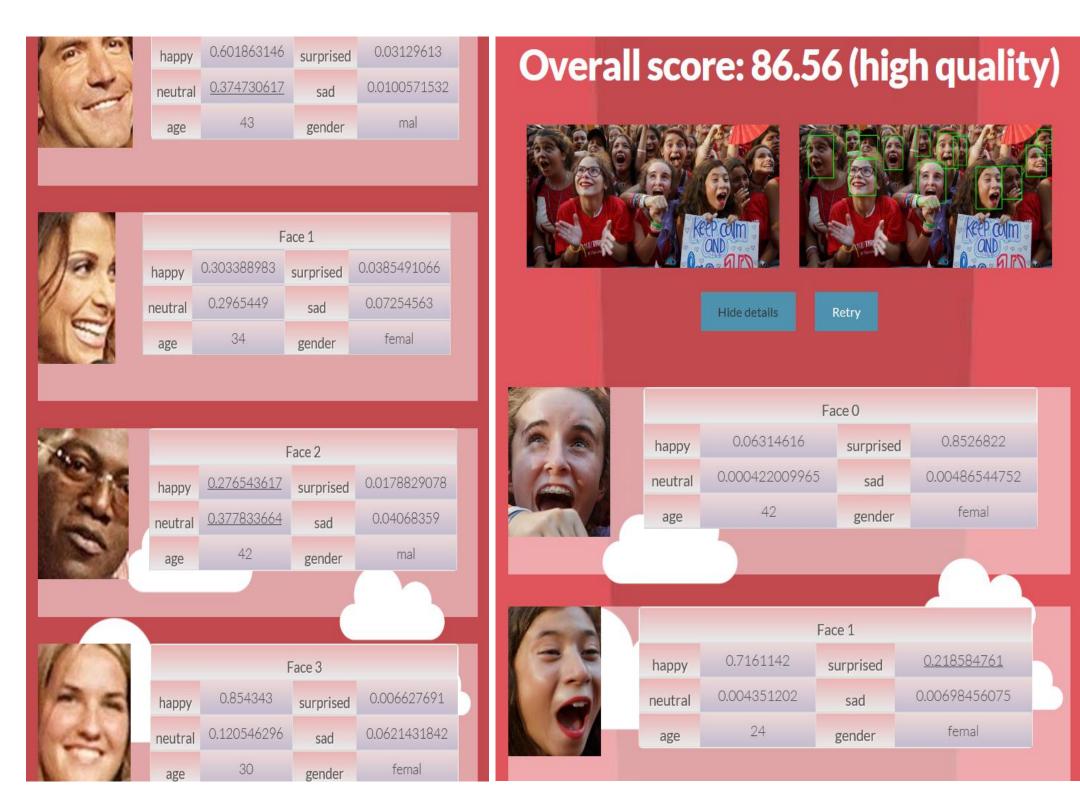
	Criterion by ag	ge and gender		Criterion by show type				
age	factors	gender	factors		comedy	magic show	touching lecture	
	happy: 0.8	male	surprised: 1.2	happy	1.0	0.4		
age ≤ 20	surprised: 0.8	male	sad: 1.2					
	neutral: 1.2			surprised	0.2	1.0		
	happy: 1.2	female	surprised: 0.8	neutral	-0.2	-0.2	0.2	
age > 55	surprised: 1.2	TEITIAIE	sad: 0.8					
	neutral: 0.8			sad			1.0	

Result obtained



Overall score: 73.93 (medium quality)





Conclusions

Conclusions

 We are able to achieve the function of calculating overall emotion of audience based on an image of a crowd and analyze emotion distinctions within different genders and age groups.

Lessons

- App development by cloud
- Software prototype designing approaches
- Node.js server implementation
- Teamwork

Limitations

- Cannot upload a series of images of shows
- Expression recognition accuracy

Other use cases

- Assess
 amusement
 parks by tourists'
 feedback
- Assess course quality at school