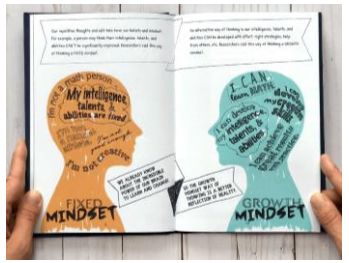
EmoJ– A Journal of emotions



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Capstone project

Flatiron School

Data Science

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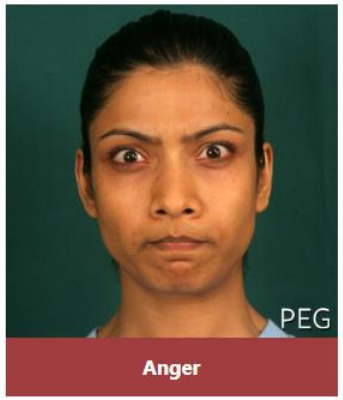
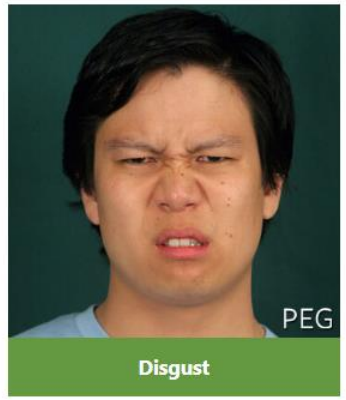
Human Facial Expressions

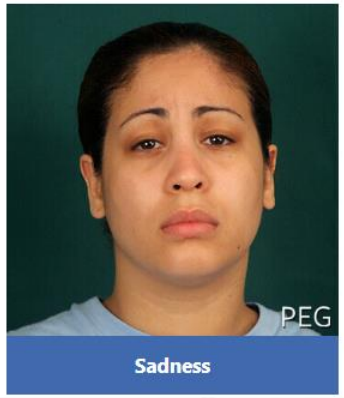
- Human emotion is most vividly understood by facial expression. Dr. Paul Ekman's shows there are 7 universal facial expression of emotion.

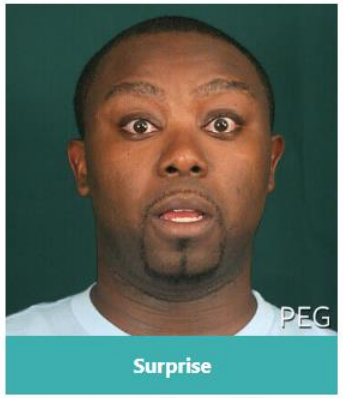
- A personal journal is not only a record of events it's a record of the person.

- What if we can record images, translated to a record of emotions to record our emotional state in our daily life ?







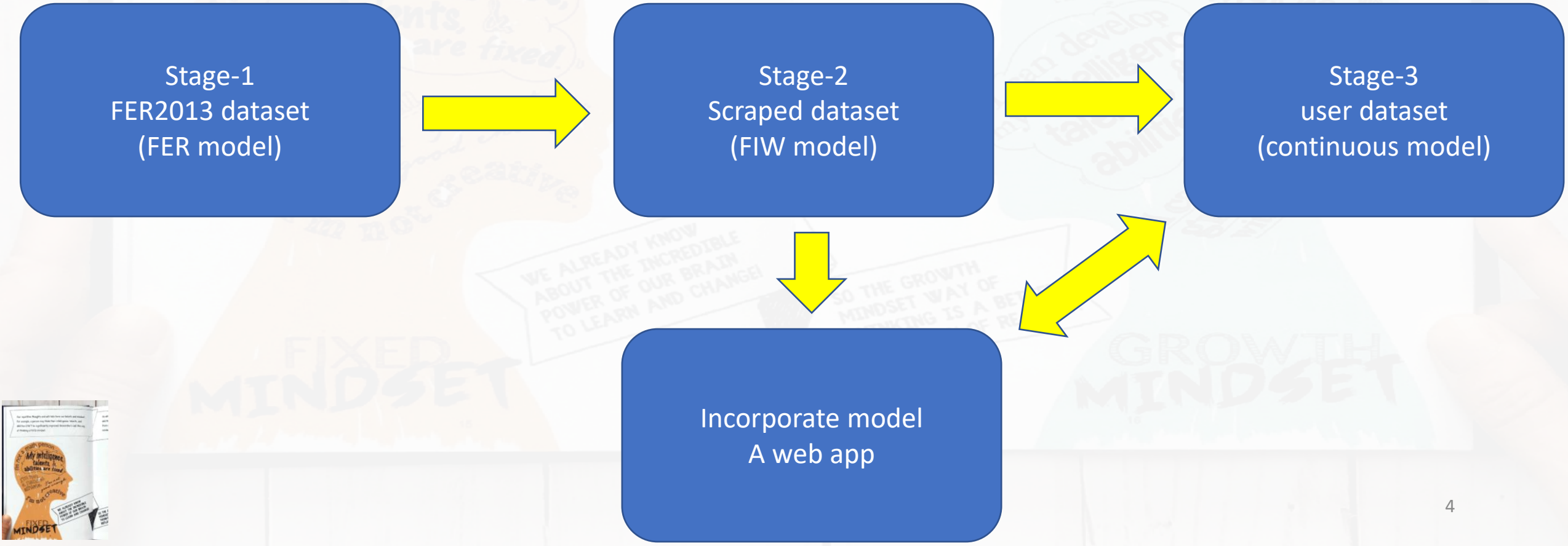


The Challenge & Objective

- Obtain diverse and large enough image dataset that is well labelled
- Build a CNN model that can continuously improve with usage
- Build a web app that is both efficient and attractive to the user
- Develop meaningful analysis for the gathered data and useful reporting to the user

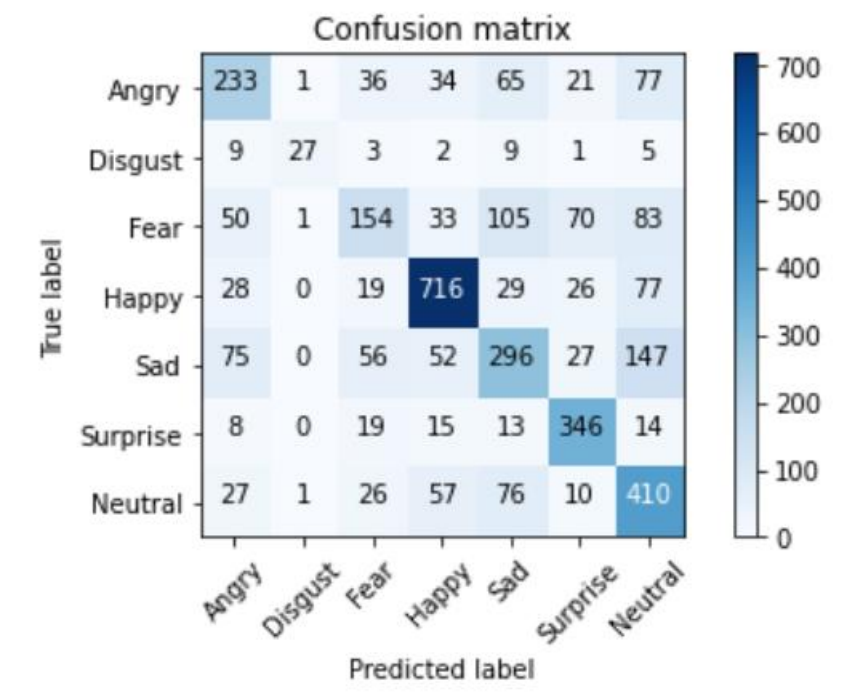
Strategy

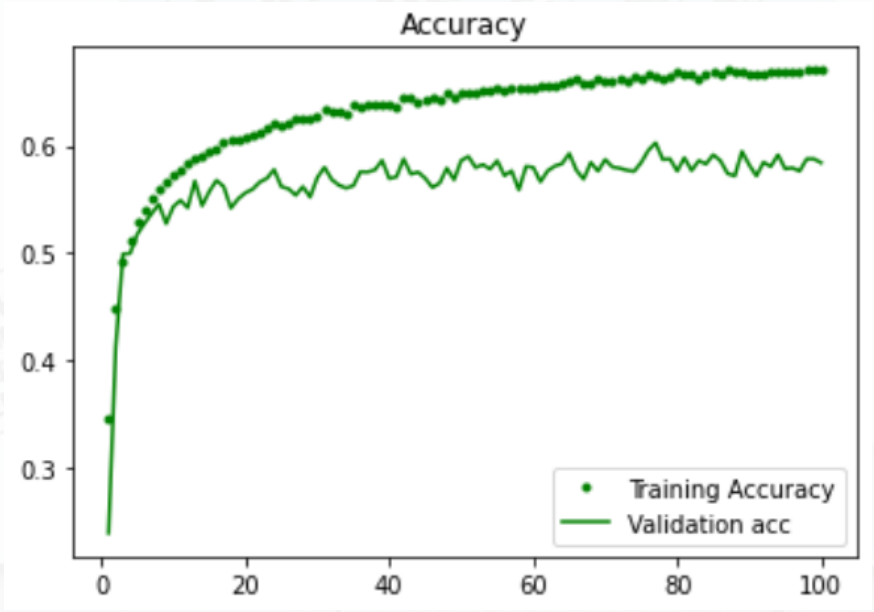
The overall strategy is a three-stage process within ROSEMED method



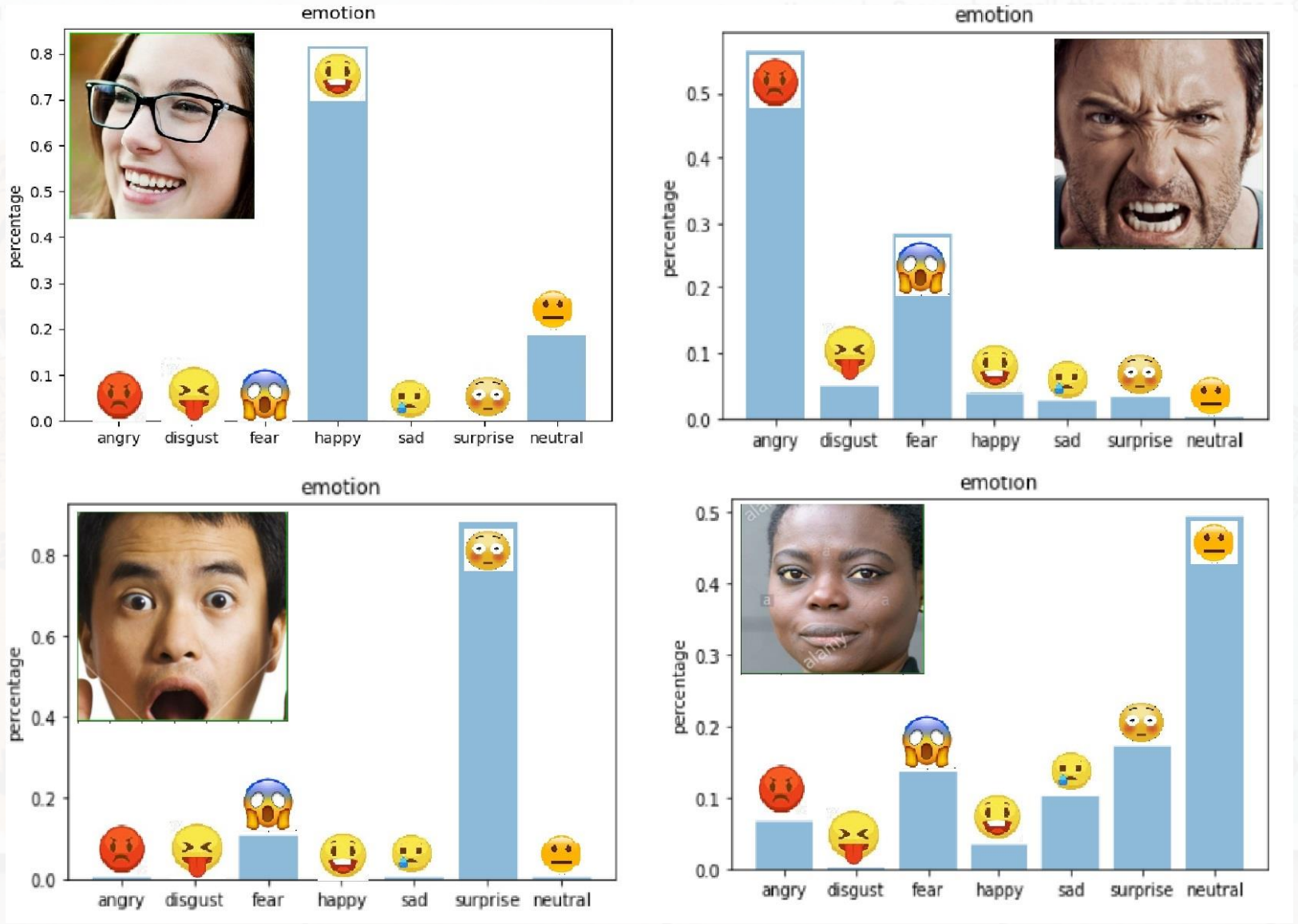
The Model

Model	Loss	Accuracy	Val_Loss	Val_Accuracy
Base Model	0.06	0.97	3.10	0.56
Improved Model	0.02	0.76	0.01	0.61



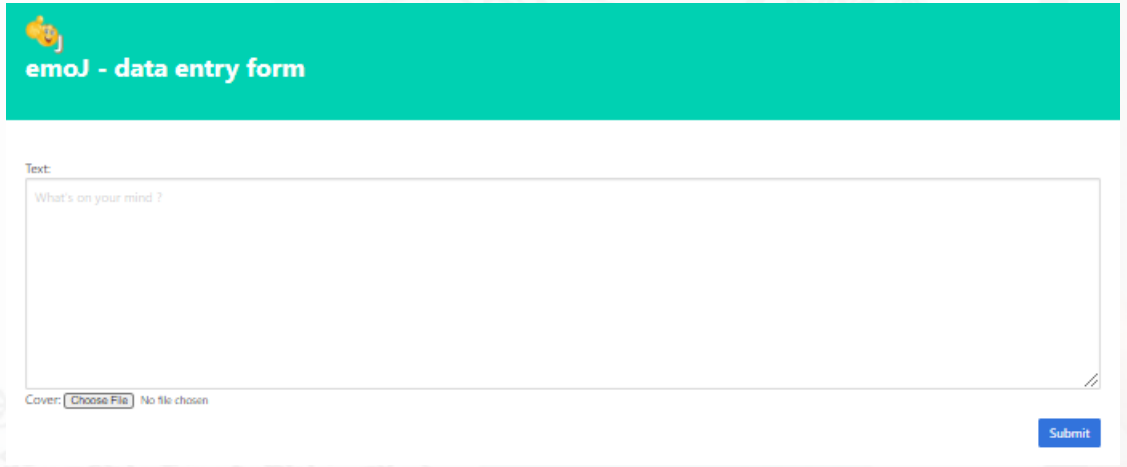


Results


emotion
percentage
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
angry
disgust
fear
happy
sad
surprise
neutral


My intelligence, talents, & abilities are fixed
I'm not changing
FIXED MINDSET

Django web app:



Conclusion

- Present a deep NN approach for the detection of human emotion
- Improved model has a 76% training and 61% validation accuracy
- Web scraped images proved to decrease the model accuracy
- With a very small set of images from a single user can quickly build a model that is well optimized for that each user
- For the purpose of a journal app the models constructed here suffice

Recommendations

- The model is demonstrated to work as a web app
- User must input at least 10 images per emotion to get a baseline model
- The app will be built to continuously feed new images and labels from the user
- could possible be an asset to psychiatrists, psychotherapist as well as general physicians

Future work

- Implement authentication and DB for each user
- Add automatic re-training of the model on server side for each user
- add capability for users to update labels
- deploy the Django webapp
- develop and deploy Android and IOS apps

Thank You

- **Amber Yandow**
- **Ben Jacobson**
- **Dara Paoletti**
- **Vidya Menon**
- **Jesse Neumann**

Appendix: Datasets

Source	Size
Kaggle dataset	35888
Google images	3136
User (me)	77

- Extended Cohn-Kanade Dataset - CK+
- Japanese Female Facial Expressions (JAFFE)
- MMI Database
- AffectNet: A Database for Facial Expression, Valence, and Arousal Computing in the Wild