Challenges in providing Automatic affectie Feedback in Instant Messaging Application

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Outline

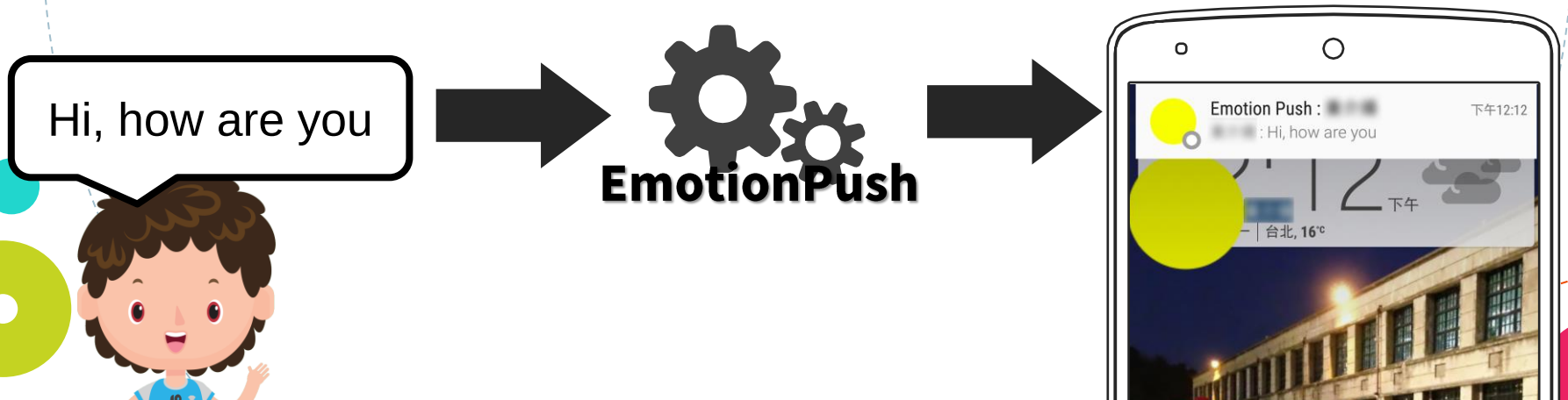
- Introduction
- Use case of EmotionPush
- Challenges
- Conclusion and Future Work

Introduction

- **Text-based emotion classification** becomes increasingly important on assistants as frontline interactions for service design.
- Still less, it has rarely been used in applications for individual users such as instant messengers.
- To understand the feasibility of text-based affective computing in the era of mobile devices, we introduced **EmotionPush**.

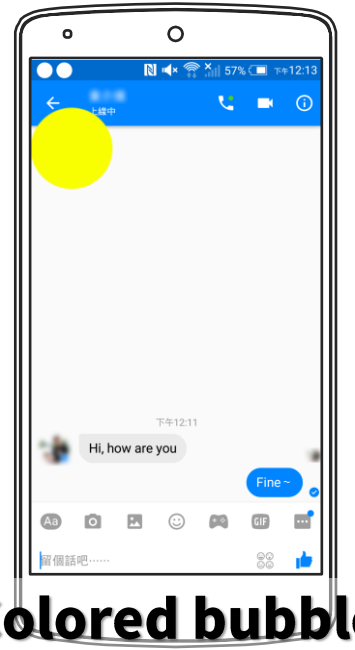
Introduction

- **EmotionPush** is a mobile application that automatically detects the emotion of the text message that user received via Facebook Messenger, and provides emotion cues by colors in real-time.



Introduction

- **EmotionPush** provides two kinds of emotion cue.

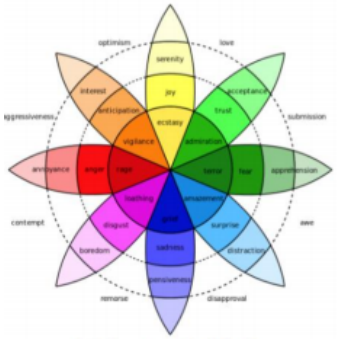


Colored bubble

Notification

Introduction

- **EmotionPush** use 7 colors to represent 7 emotions according to Plutchik's emotion wheel.



Plutchik's Emotion Wheel

Emotion	Emotions in LJ40K	RGB
Anger	Aggravated, Annoyed, Frustrated, Pissed off	(247, 10, 10)
Joy	Happy, Amused, Cheerful, Chipper, Ecstatic, Excited, Good, Loved, Hopeful, Calm, Content, Crazy, Bouncy	(255, 255, 0)
Sadness	Sad, Bored, Crappy, Crushed, Depressed, Lonely, Contemplative, Confused	(40, 26, 122)
Fear	Anxious	(0, 255, 0)
Anticipation	Accomplished, Busy, Creative, Awake	(255, 154, 23)
Tired	Cold, Exhausted, Drained, Tired, Sleepy, Hungry, Sick	(211, 43, 252)
Neutral	Okay, Blah, Blank	(No Color)

Introduction

We first list the potential use cases of EmotionPush and then describe the challenges we identified.

- The Continuum of Emotion
- Multi-User Conversations
- Different Dynamics Between Different Users
- Misclassification of Emotions
- Unconventional Content

Use Case of EmotionPush

- **Emotion Management**
  Users will be able to decide whether they want to receive some information in order to keep their emotion stable.

Use Case of EmotionPush

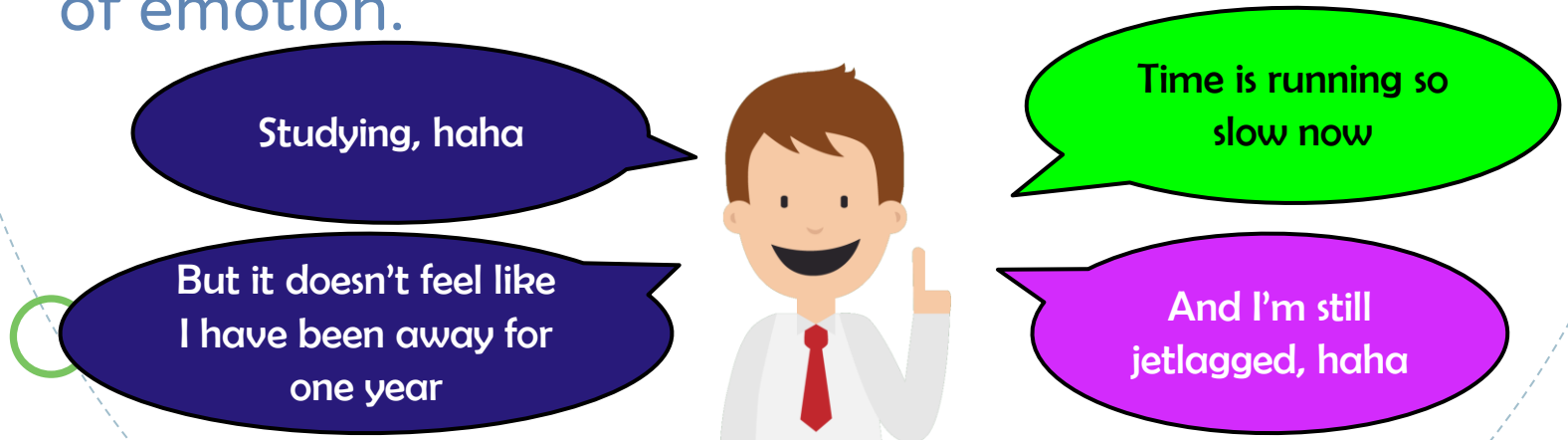
- **Interacting with People of Little Acquaintance**
  Users mentioned that EmotionPush helps them when talking to strangers or new friends.

- **Fun Tipics to Have**
  When users see some suggested emotions which are different from they expect or interpret, they will confirm with the other party.

Challenge

The contimuum of Emotion

- EmotionPush uses a categorical representation of emotions instead of a dimensional representation to reduce users' cognitive load.
- But this raises a limitation of expressing continuum of emotion.



Challenge

Multi-User Conversations

- 22.46% of messages were recorded in multi-user chatting groups, which is also known as **Group** or **Channel**.
- Providing emotion cues on top of a multi-user conversation would make it difficult for users to concentrate on the running dialog.

Challenge

Multi-User Conversations

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Challenge

Multi-User Conversations

- Multi-user conversations also raised challenges in designing user experience.
- Both ways EmotionPush uses to provide emotion cue are not capable to efficiently convey emotions in multi-user conversations.

Challenge

Different Dynamics Between Different Users

- Classifying emotions solely based on text causes the risk of neglect of user context, which is known to have strong correlations with user behavior.

EmotionPush work better between strangers

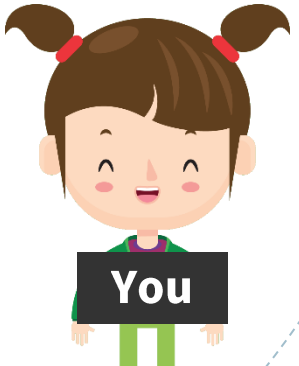
Challenge

Different Dynamics Between Different Users

- Classifying emotions solely based on text causes the risk of neglect of user context, which is known to have strong correlations with user behavior.

Conversations between friends often contain informal expressions

A little after 6:30 might work better bc of activity fair?



Challenge

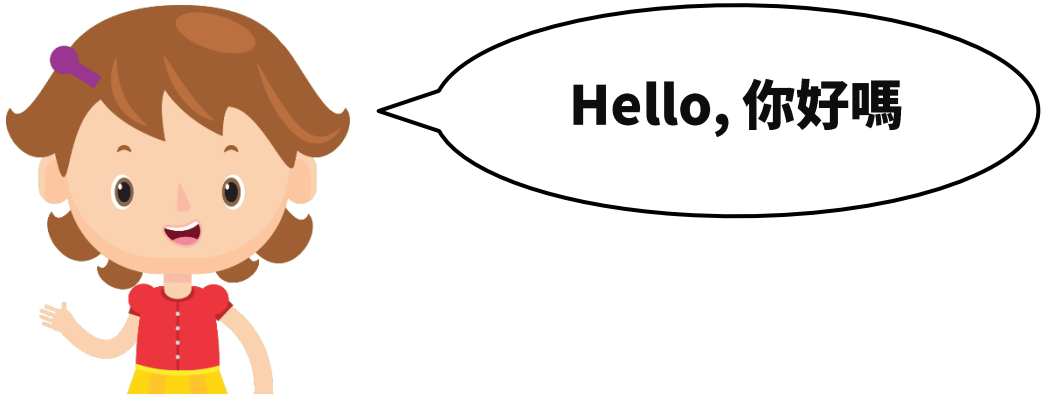
Misclassification of Emotions

- Even for the best emotion category **Anger**, 34.4% of messages are wrongly categorized.
- Users think the wrongly-predicted emotion colors are not harmful to their chatting experiences. **(average rating = 0.85, ranges from 0 to 4)**
- Users also think the correctly-predicted emotion colors are helpful. **(average rating = 2.5, ranges from 0 to 4)**

Challenge

Unconventional Content

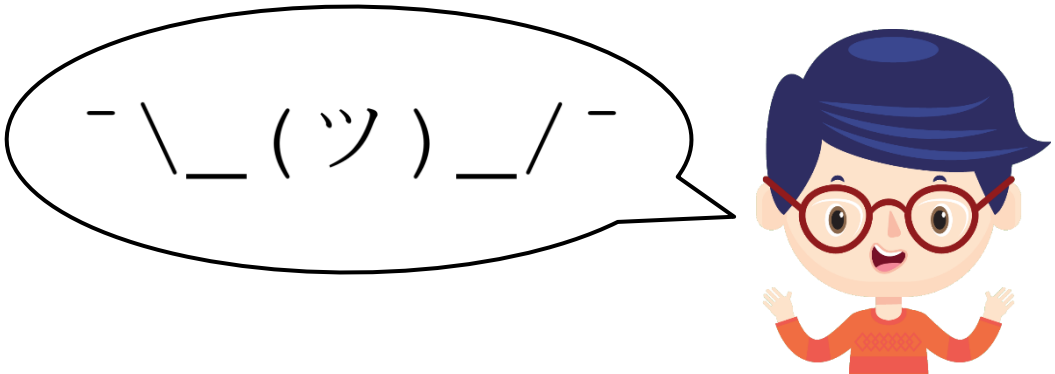
- **Multiple Languages & Code Switching**
  All these technologies require sufficient labeled data for training. As a result, technologies are not capable of processing unseen languages.



Challenge

Unconventional Content

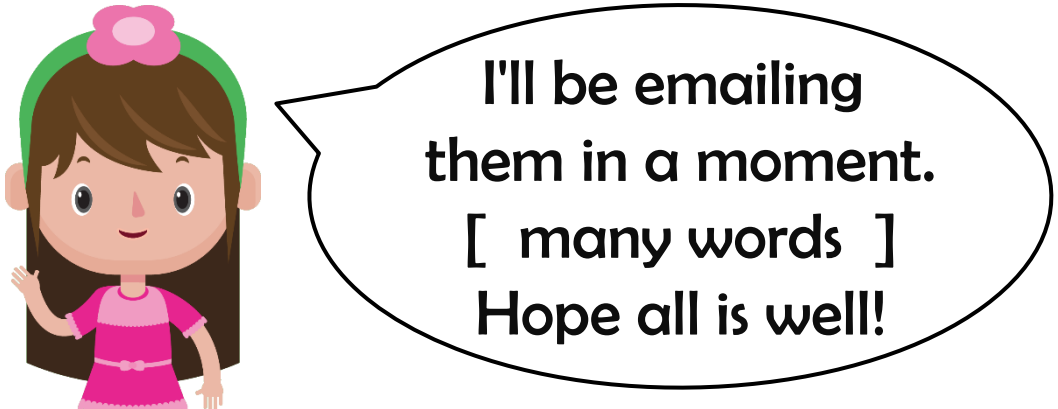
- **Emoji, Emoticons and Stickers**
  Graphic symbols are widely used in instant messages for expressing emotions. However, dealing with every emojis is infeasible as users create newly graphic symbols everyday.



Challenge

Unconventional Content

- **Paragraph-like Long Messages**
  Some users will use multiple sentences to express complex ussues or emotions, which made it difficult to conclude the message with one single emotion.



Conclusion & Future Work

- We describe challenges in deploying an emotion detection system, **EmotionPush**, for instant messaging applications.

- In the future, we plan to design a mechanism which encourages users to contribute their contents and feedback their emotions.

Thanks!

Any questions?