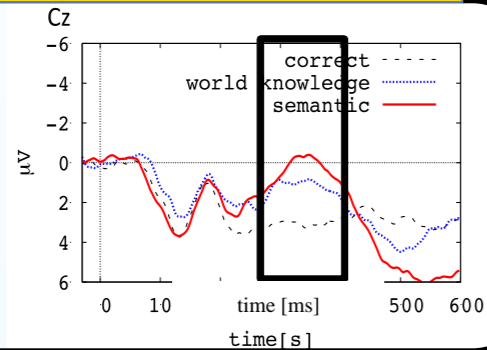


Cognitive Communication Group

Previous works

Detect feelings of mismatch from wrong

Example of stimuli
 ✓ Dandelions are yellow.
 ✓ Dandelions are blue.
 ✓ Dandelions are hot.
 Compare brain waves of correct, pragmatically incorrect, semantically incorrect words



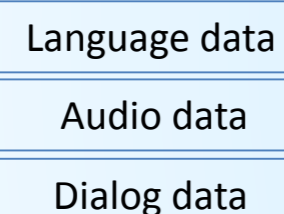
Measuring incongruity of ASR output

Types of automatic speech recognition (ASR) errors
 Correct : This / pen / is / mine.
 ● **Deletion** : This / ■ / is / mine.
 ● **Substitution** : This / pin / is / mine.
 ● **Insertion** : This / pen / is / also / mine.



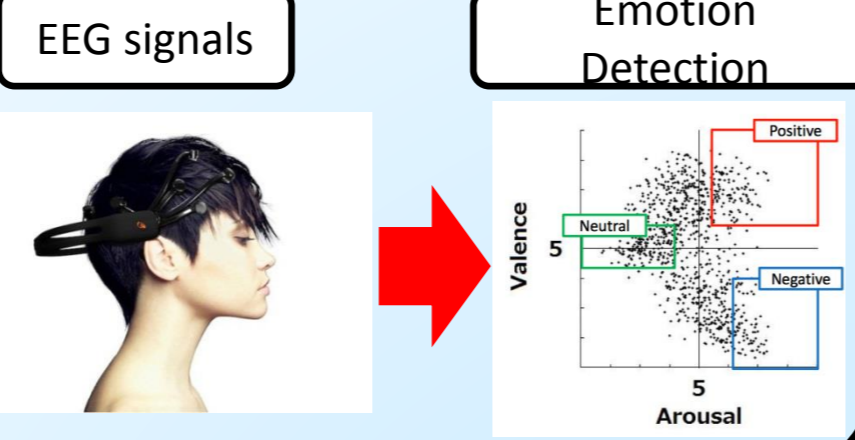
Dialog regulation using EEG

Measure EEG in dialog and use it for the dialog management



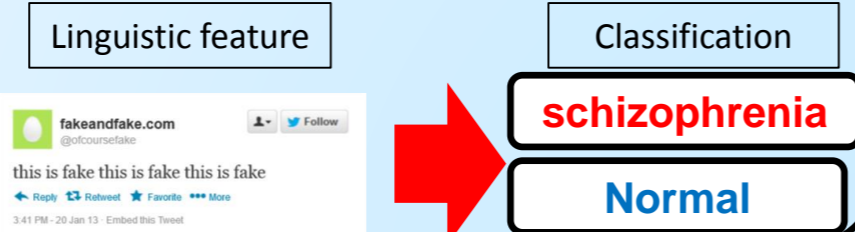
Emotion classification using EEG

Develop emotion classification systems based on subjective evaluation and EEG signals for stimulus such as TV commercials

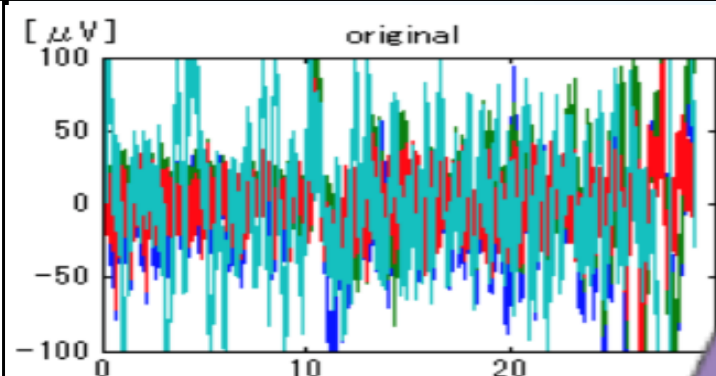


Detection of schizophrenia

• detect sign of schizophrenia from SNS text

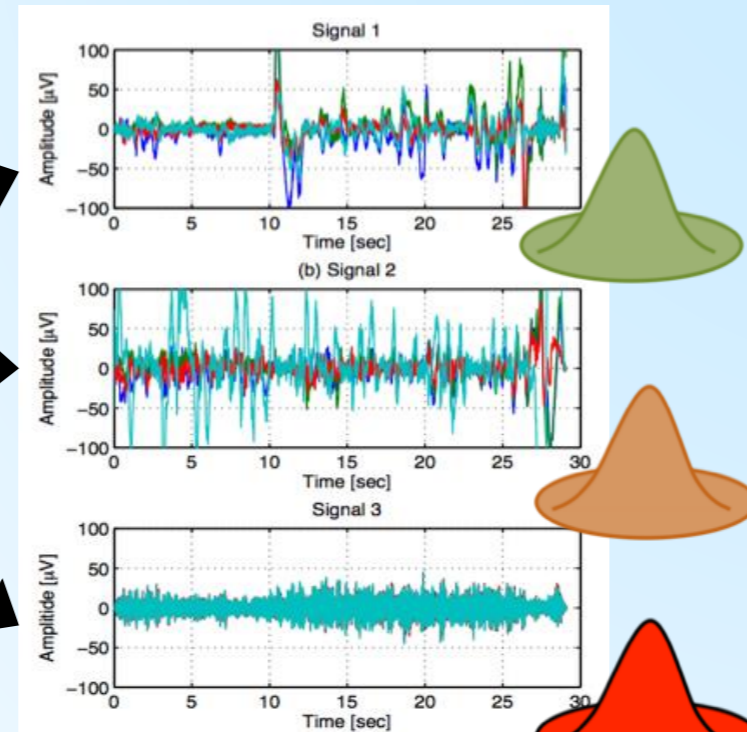


Enhancement of Objective Components of EEG

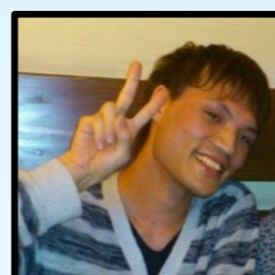


Enhance Objective Components

Wiener filter with parameters estimated using MAP estimation



H28. D2
Hayato Maki



Social Communication Skills

H28. Assistant Prof
Hiroki Tanaka



What are Social Skills ?

Eye-gaze Speech/Language
 Posture Distance Gesture

- Important for relating to friends and interviews
- Those with autism spectrum disorders (ASD) have deficits in social communication skills

Dialogue System for Social Skills Training

- ASD have good skills in computer
- Social skills training is integrated into automatic dialogue system
- Measure improvement from child's speech/language signals



ASD screening

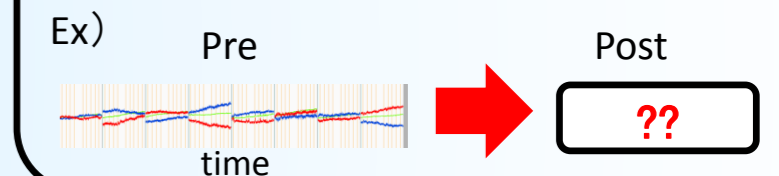
Classification of children with ASD from narrative

Feature set	Accuracy [%]		
	Baseline	NB	SVM
Language		62.2 †	70.3*
Speech		57.6	67.6*
All	50.0	65.0 †	68.8*
Selected		67.4*	71.9*
T-Uncor		67.8 †	68.1 †
Leave-one-speaker-out	50.0	65.5 †	66.7 †

Apply to detection of depression

Evaluation using NIRS

Measure the effect of social skills training by using NIRS



Detection of Unknown words using Eye tracking

Detect eye-movement pattern on unknown words

- Machine learning on individual Eye-movement pattern on unknown words
- Considering individual vocabulary, Detect unknown-words



H28. M2
Rui Hiraoka

Fixation duration Heat Map

Alice: What's wrong? You look troubled.
 Bob: My sister helped me with my math homework, but no matter how hard I tried to do it, I simply could not get my head around it.
 Alice: Would you like me to show you? It's really not that difficult.

Eye-movement Features

Linguistic Feature



Eye Tracker

Detect unknown words