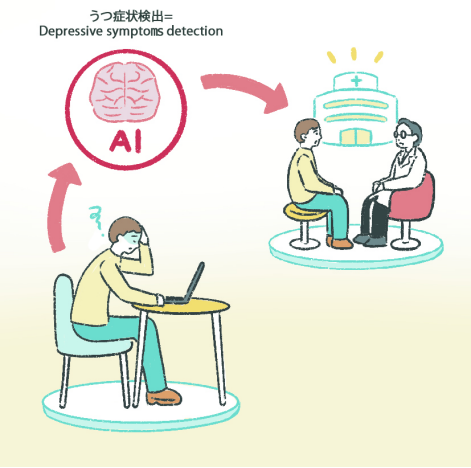
E49

Identify individuals who may be suffering from depression to facilitate early treatment

Automatic depression detection from speech and facial expression

IOWN Evolution Technology that Supports Individuals with Information from Their Brains and Bodies



Background

Mental disorders are increasing as telecommuting becomes more common and the number of people living alone grows. Depression, in particular, can have a major impact on daily functioning, and the more severe the condition, the more difficult it is to manage.

Summary

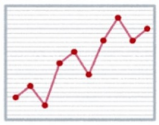
Our goal is to develop AI technology that rapidly detects depression symptoms in daily life and promotes early intervention. Our team aims to create a system which can detect depressed mood simply by analyzing a person's voice and facial expressions when answering specific questions.

Target technology under research and development

Specific Questions (speech tasks)
- Short sentence reading
- Free answer to the question
- Tongue Twister ・・・

Depressive Symptom Detection Model

Daily Recording of Depressive Symptom



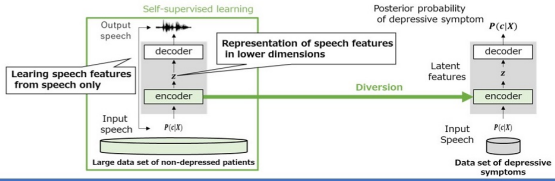
Approach 1 : Analysis/Development of speech tasks

Provide a speech task that is more likely to obviously express a depressed mood to improve detection accuracy

Medical Findings	Proposed New Speech Tasks	Characteristics of Depressive Symptom Speaker
Lack of emotional expression	**Sentence reading with emotion**	・**Small changes** in happy/angry emotions (Pitch/Loudness of voice,etc)
Decrease in cognitive function	**Word association game**	・**Decrease in word counts** ・**Increse in silent time**
	Word chain game (shiritori) in oneself	
Decrease in articulatory function	**Tongue twister**	・**Decrease in speaking speed** ・**Increase in the number of errors**

Approach 2 : Construction of detection model

Learning models on small data sets of depressive symptoms using **self-supervised learning models on large data sets**



Features

- Depressed mood detection through vocal and facial responses using media processing technology
- Development of speech tasks that are likely to express a depressed mood
- Investigation of highly accurate detection model from small-scale data

Future_benefits

Creating an agent service that helps prevent mental illness and promotes early recovery by consistently checking daily activities and promoting timely mental health treatment.

Exhibiting Company

NIPPON TELEGRAPH AND TELEPHONE CORPORATION

Contact

rdforum-exhibition@ml.ntt.com