



Cognitive Apps Emotion Detection AI
accuracy testing overview

Minsk, 2020

Purpose of the study: to determine the accuracy of the emotional state recognition of users using the AI.

Research objectives:

1. Conduct a differential analysis of the emotional state of subjects with a positive (happiness, pleasure, joy, calmness) and negative emotional background (fear, disgust, anger, irritation, sadness) using the AI.
2. Conduct a differential analysis of the emotional state of subjects with a positive (happiness, pleasure, joy, calmness) and negative emotional background (fear, disgust, anger, irritation, sadness) using human analysis.
3. Compare the obtained data to determine the accuracy of recognition.
4. Use the obtained data for further diagnostics of a mental state of the subjects.

Subject of research: female and male subjects aged 18-54 years (66% of women and 34% of men, respectively), regardless of their emotional state.

Research subject: the emotional state of users.

The object and subject of the research were selected according to the relevance of the research topic, its scientific and practical significance.

Scientific novelty: the proposed method of differential diagnosis of the emotional state of users can be used in diagnosing mental disorders in dynamics.

Preconditions: 262 users accepted beta-testing user agreement and agreed to provide their voice recordings for analysis by Cognitive Apps LLC employees and affiliated people.

Testing protocol:

The recordings were manually analysed by Dr. Arthur Sinevich and Ms. Karina Leikina (hereinafter researchers) under the supervision of Dr. Eugene Genshaft, Dr. Sergey Zinkov, Dr. Anton Saikov.

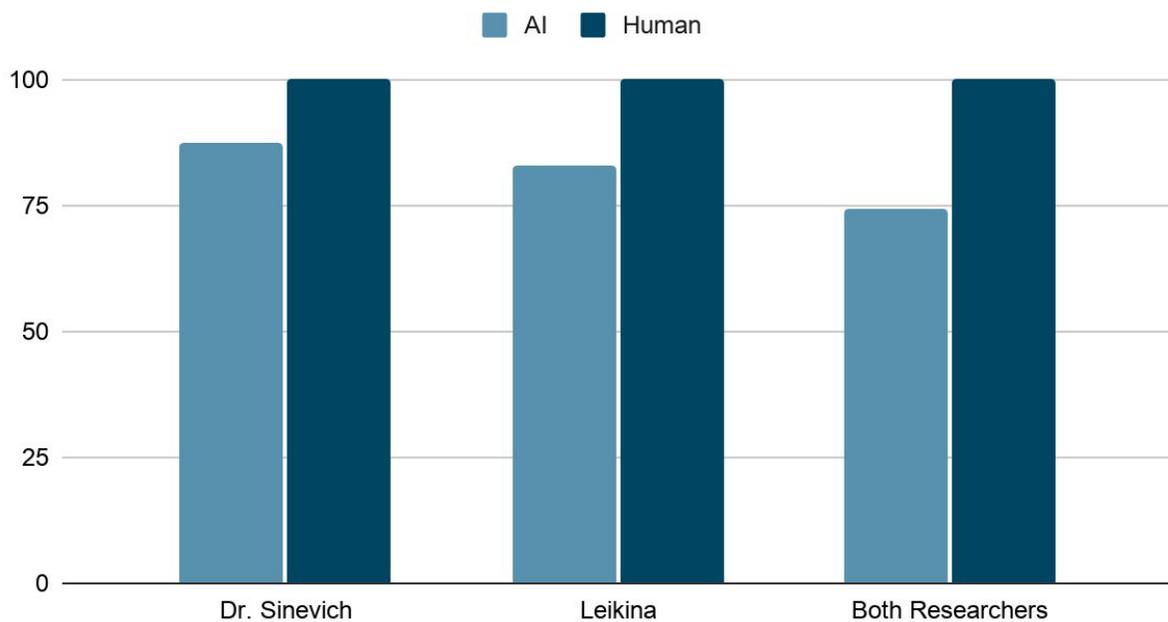
Manual (human) analysis results were compared with the results provided by Cognitive Apps AI according to the following rules:

1. Irrelevant data (1 second messages, silence, samples without words, etc.) was not taken into account (19.5% of the recordings);
2. Cases when human opinions did not match were counted separately (13% of the recordings).

Testing results:

1. In 74.5% of the cases the opinion of both researchers and Cognitive Apps AI matched;
2. In 87.5% of the cases the opinion of Dr. Arthur Sinevich and Cognitive Apps AI matched.

Cognitive Apps AI accuracy



Conclusion: Cognitive Apps emotion recognition AI can be used as a data source for diagnosing mental disorders along with the additional data such as user activity, quality of sleep, work and life balance, context.

Researchers

Dr. Arthur Sinevich, PhD, Psychotherapist - sinevich.artur@gmail.com

Karina Leikina, Managing Director of Digital Agency - kl@pr3.eu

Research Supervisors

Dr. Eugene Genshaft, Psychiatrist - zh-gen@mail.ru

Dr. Sergey Zinkov, Psychiatrist-Narcologist - neonorzen2@mail.ru

Dr. Anton Saikov, Psychotherapist - antonsaikov@mail.ru

References

F32. Major depressive disorder, single episode (F32.0, F32.1, F32.2) - <https://icd.who.int/browse10/2019/en#/F32>

F33. Major depressive disorder, recurrent (F33.0, F33.1, F33.2) - <https://icd.who.int/browse10/2019/en#/F33>

F34. Persistent mood [affective] disorders (F34.0 Cyclothymic disorder; F34.1 Dysthymic disorder) - <https://icd.who.int/browse10/2019/en#/F34>

F41. Other anxiety disorders (F41.0 Panic disorder [episodic paroxysmal anxiety] without agoraphobia; F41.1 Generalized anxiety disorder; F41.3 Other mixed anxiety disorders) - <https://icd.who.int/browse10/2019/en#/F41>

F43. Reaction to severe stress, and adjustment disorders (F43.0 Acute stress reaction; F43.1 Post-traumatic stress disorder (PTSD); F43.2 Adjustment disorders) - <https://icd.who.int/browse10/2019/en#/F43>

F51. Sleep disorders not due to a substance or known physiological condition (F51.0 Insomnia not due to a substance or known physiological condition; F51.1 Hypersomnia not due to a substance or known physiological condition) - <https://icd.who.int/browse10/2019/en#/F51>

F53. Puerperal psychosis - <https://icd.who.int/browse10/2019/en#/F53>