



GUJARAT TECHNOLOGICAL UNIVERSITY

(Established by Government of Gujarat under Gujarat Act No. : 20 of 2007)

ગુજરાત ટેકનોલોજીકલ યુનિવર્સિટી

(ગુજરાત સરકારના ગુજરાત અધિનિયમ ક્રમાંક : ૨૦/૨૦૦૭ દ્વારા સ્થાપિત)

Accredited with A++ Grade by NAAC

Abstract of the Thesis



Name: Jiger Prakashchandra Acharya

Enrollment No.:189999915002

Faculty: Engineering

Discipline/Branch: Electronics & Communication Engineering

Title of the Thesis: Multimodal Approach for User Responsive Depression
Detection

Abstract

Depression is leading cause of disability globally in all age groups which severely affects the global health index. During last one decade the mental health is becoming a major burning issue to society as number of various socioeconomic, personnel and societal issues related to mental health are increased in exponential manner. Depression is mood disorders which result in severe disabling conditions which affect person's ability to cope with routine life and real-life challenges which are dynamic in nature. It may occur when person remain more than two weeks in negative state of mind continuously. Depression has observable behavioral symptoms related to affective and psycho-motor domains which can be identified by human and/or computer.

Classical approaches majorly depend on person's behavioral analysis and family observations during clinical interviews, which are effective if it can be precisely defined and assessed but persons have tendency to conceal it so they are less effective so automated, real-time and friendly tool for pre-screening or early detection is highly needed in accordance to that we have proposed Multimodal Approach for User Responsive Depression Detection which performed said task with 79% accuracy and open a new era in mental health care domain.



GUJARAT TECHNOLOGICAL UNIVERSITY

(Established by Government of Gujarat under Gujarat Act No. : 20 of 2007)

ગુજરાત ટેકનોલોજીકલ યુનિવર્સિટી

(ગુજરાત સરકારના ગુજરાત અધિનિયમ ક્રમાંક : ૨૦/૨૦૦૭ દ્વારા સ્થાપિત)

Accredited with A++ Grade by NAAC

As Depression or Depressive disorder is occur when person remains continuously in negative mood for more than 2 weeks' time person may converge to depression, we take first modality as input from visual features of face from static image and/or video either live or in stored form analyzes facial visual feature to decide emotions or mood of the person. Second modality is taken in form of Self Response Inventory (S.R.I) based on past 2-3 days experience or feeling of the person based on respond to questionnaires approach and from the response of person he or she may be classified as in Normal, Mild, Moderate or Severe Negative mood. Third modality called colour psychology is added to above questionnaires in which colour defines the emotions or mood of the person and based on the selection of colour present emotions or mood of the person is decided.

All the three modalities are independent each can decide real-time mood or emotions of person the fusion modalities concrete the result. If person get negative mood as outcome via all three modalities repeated test at different day and time during 2 weeks should executed still negative mood reflects in outcome, he or she should strongly advice to consult medical professional help for healing purpose immediately.

This PhD Thesis will help in Depression detection in user friendly simplicity manner.

List of Publication(s):

(1) Acharya JP, Shah D. User Responsive Automatic Method for Real Time Depression Detection Using Deep Neural Network. J Neonatal Surg [Internet]. 2025 Jul. 8 [cited 2026 May 1];14(32S):4286-97. (Scopus) Available from: <https://www.jneonatalurg.com/index.php/jns/article/view/8117/9194>

(2) Acharya JP, Shah D. Automatic mood detection tool: Self Response Inventory. International Research Journal of Engineering and Technology. 2026 Feb;13(02): 821- 826 Available from: IRJET-V13I02120.pdf

(3) P. Acharya J, S. Shah M. Depression Detection System: A Systematic Review. J Neonatal Surg [Internet]. 2025 Jun. 21 [cited 2026 May 1];14(32S):1486-92. (Scopus) Available from: <https://www.jneonatalurg.com/index.php/jns/article/view/7595/6605>