

INTEL AI HACKATHON

Team Name: Code Commanders

TOPIC: Multimodal Mental Health Assessment Suite

Team members Names

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Problem Statement

- **Increasing Prevalence of Mental Health Concerns:** The number of people affected by mental health issues is on the rise, making it a pressing global concern.
 - **Need for Early Detection Tools:** There is a critical need for tools that can detect signs of deteriorating mental health and depression early on, to initiate timely interventions.
 - **Aim to Maintain a Healthy Community:** The goal is to foster a community where mental health is understood, prioritized, and cared for.
 - **Lack of Accessible Tools:** Many existing mental health assessment tools are not easily accessible to everyone, especially those in remote areas or those who cannot afford regular therapy sessions.
 - **Stigma Associated with Mental Health:** There is still a significant stigma associated with mental health issues, which can prevent individuals from seeking help.
 - **Inadequate Understanding of Mental Health:** There is a lack of understanding and awareness about mental health in many communities, leading to misdiagnosis and ineffective treatment plans.
 - **Need for Personalized Care:** Mental health conditions vary greatly from person to person. Therefore, there is a need for personalized assessment and care plans.
 - **Integration of Multimodal Data:** There is a lack of tools that effectively integrate multimodal data (like video, audio, and text) for a comprehensive mental health assessment.
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1. Solution:

- **Multimodal Mental Health Assessment Suite:** A comprehensive tool for assessing mental health conditions using multimodal data.
- **Objective:** To provide a nuanced understanding of mental health conditions, aiding in more accurate diagnostics and treatment planning.
- **Components:** The suite will analyze:
 - Video data: Facial expressions and body language.
 - Audio data: Speech patterns and tonality.
 - Standard scales: Utilize existing mental health assessment scales.
- **Benefits:** This approach allows for a more holistic understanding of the patient's condition, potentially uncovering nuances that single-mode assessments might miss.

2. Method:

- **Data Collection:** Gather video, audio, and written responses from patients during interviews.
- **Data Analysis:** Use Natural Language Processing (NLP) for analyzing patient interviews and written responses, and Computer Vision (CV) for analyzing facial expressions and body language.
- **Integration:** Combine the results from NLP and CV analyses to provide a comprehensive assessment of the patient's mental health condition.
- **Personalized Care:** Use the assessment results to develop personalized care plans for each patient.
- **Continuous Monitoring:** The system can be used for continuous monitoring of the patient's condition, providing real-time updates to healthcare providers.

3. Intel tool kits used:

- **Intel Distribution of OpenVINO Toolkit:** For deploying AI models, especially computer vision tasks to analyze facial expressions and body language.
- **Intel AI Analytics Toolkit:** It can help in analyzing and processing the data efficiently.
- **Intel DevCloud:** For testing and developing the models with access to Intel's CPUs, GPUs, and FPGAs.
- **Intel Deep Learning Boost:** This can be used to accelerate AI inference workloads, including the analysis of video and audio data.