Artificial Intelligence in Psychology and Mental Health Care

Machine Intelligence, Computing and xG networks
Internship

May 10, 2021

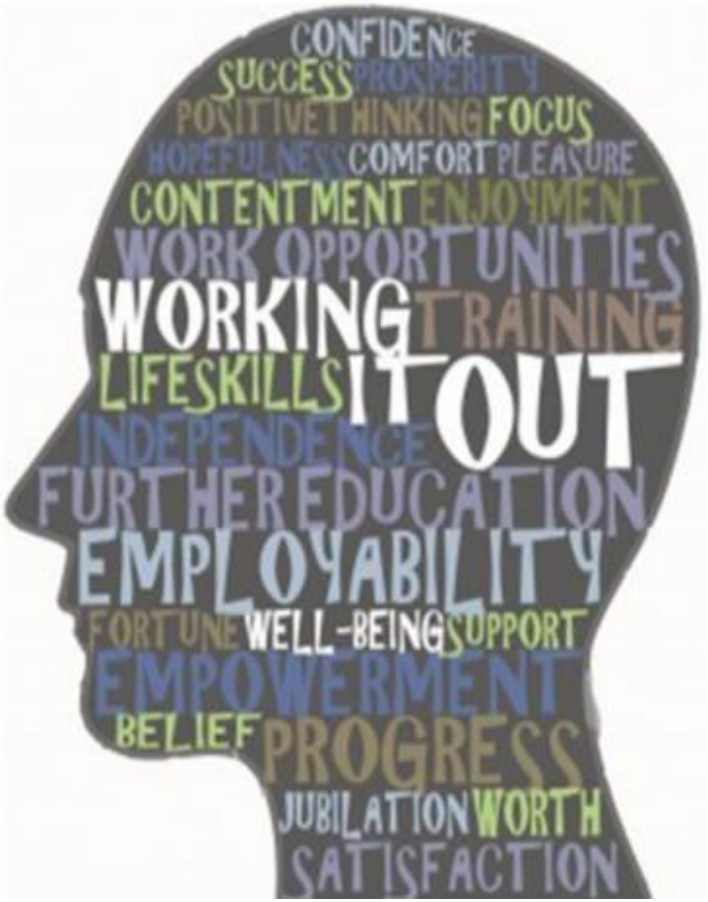
School of Engineering and Applied Science

Ahmedabad University

Outline

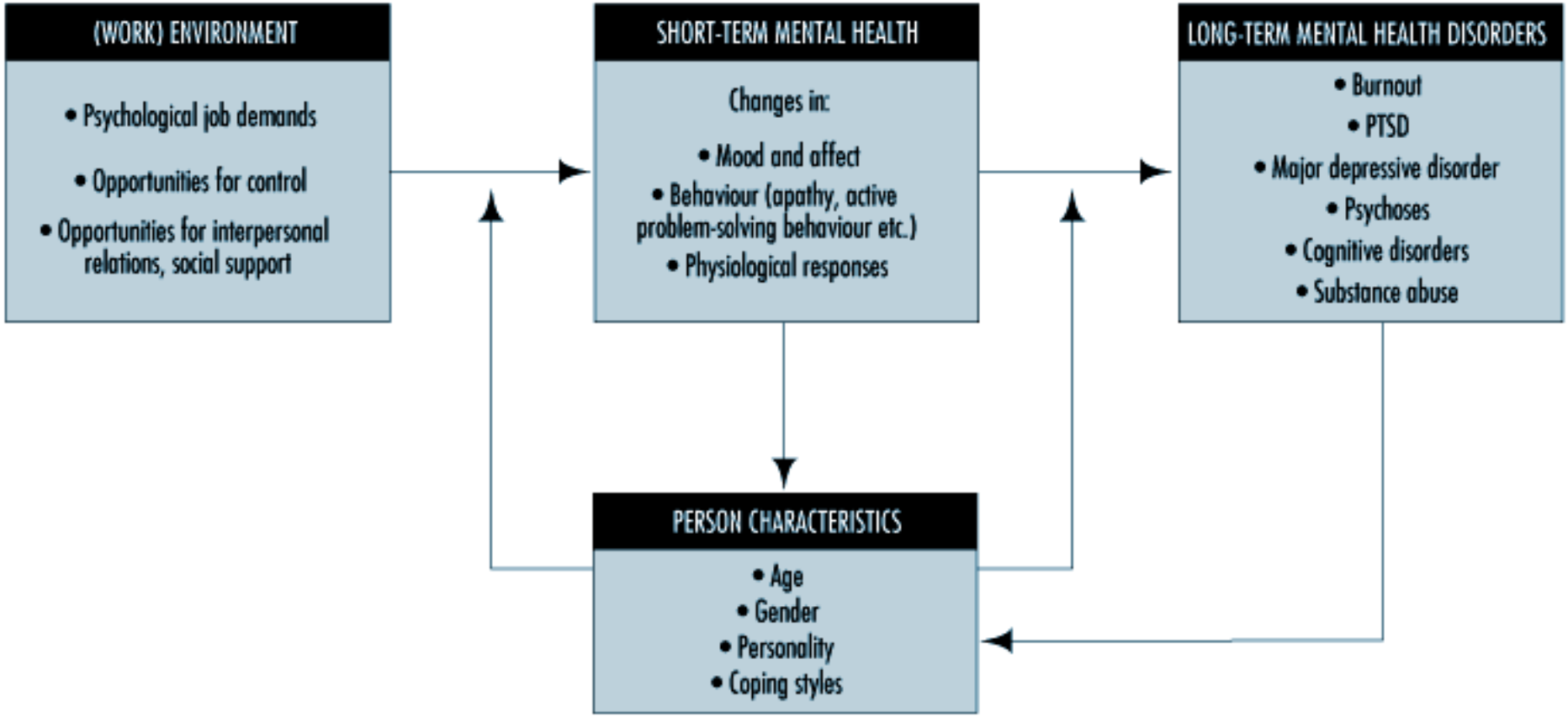
- Introduction
- Model for mental health
- AI for mental health
- Problem#1 Human Behaviour modelling and simulation for mental health conditions
- Problem#2 Automated mental state detection for mental health care
- Problem#3 Predictive analysis for Public health surveillance and big data

Introduction



WHO estimates that the burden of mental health problems in India is 2443 disability-adjusted life years (DALYs) per 100 00 population; the age-adjusted suicide rate per 100 000 population is **21:1**. The economic loss due to mental health conditions, between 2012-2030, is estimated at USD **1.03 trillion**.

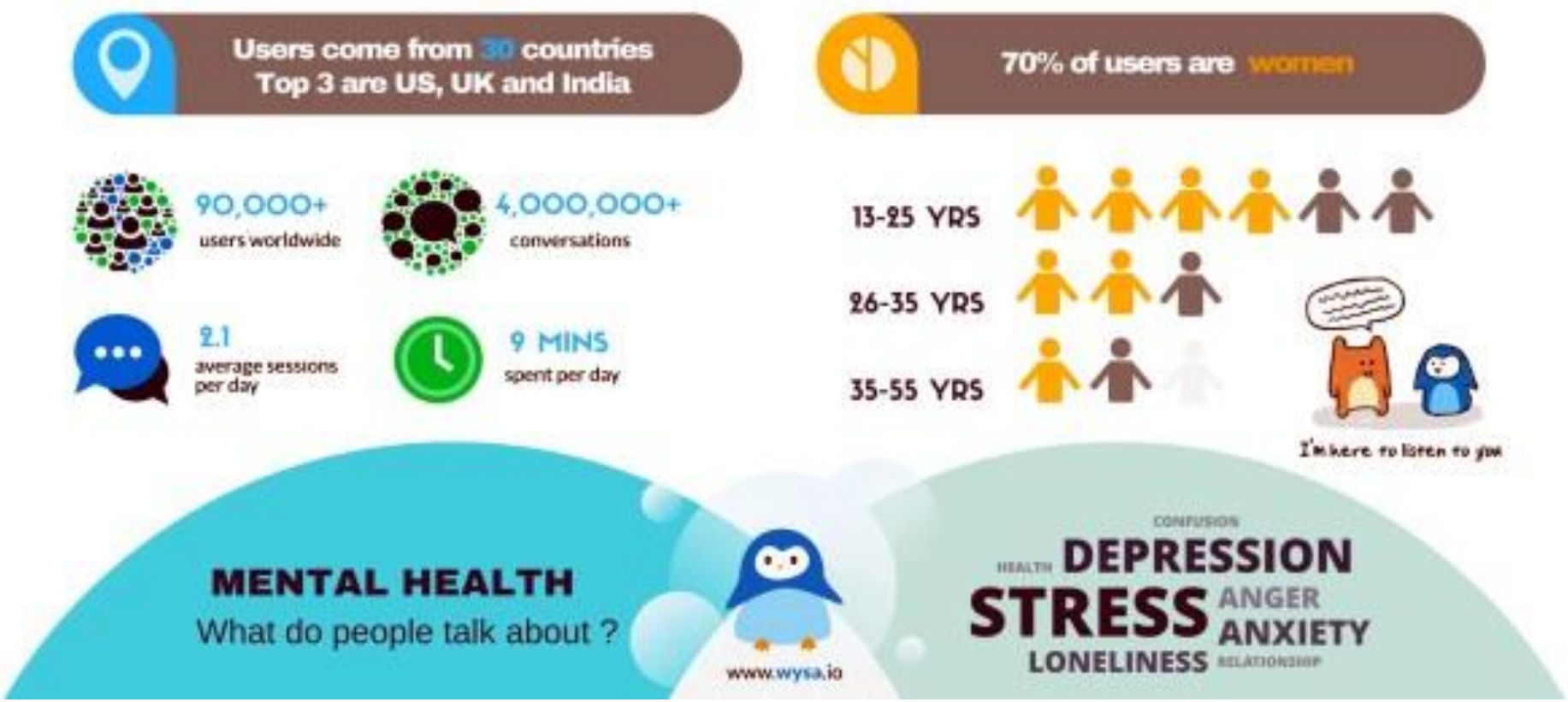
Model for Mental Health



http://www.ilocis.org/documents/chpt5e.htm

Model for Mental Health

Example: Mental health Chat



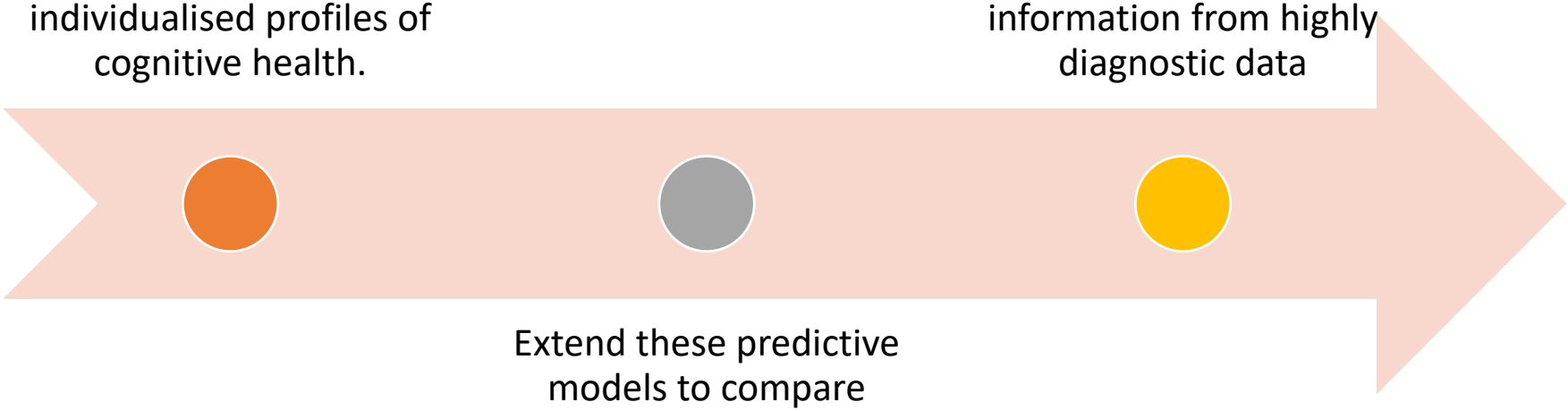
https://healthtechinsider.com/2017/10/24/ai-powered-chatbot-helps-users-improve-mental-health/

AI for Mental Health

Implement and validate machine learning models, capitalising on existing datasets, that can identify individualised profiles of cognitive health.

Extend these predictive models to compare metrics of interacting predictors across repeated measurements

Test the validity of this approach by training the algorithms produced with 'privileged' information from highly diagnostic data



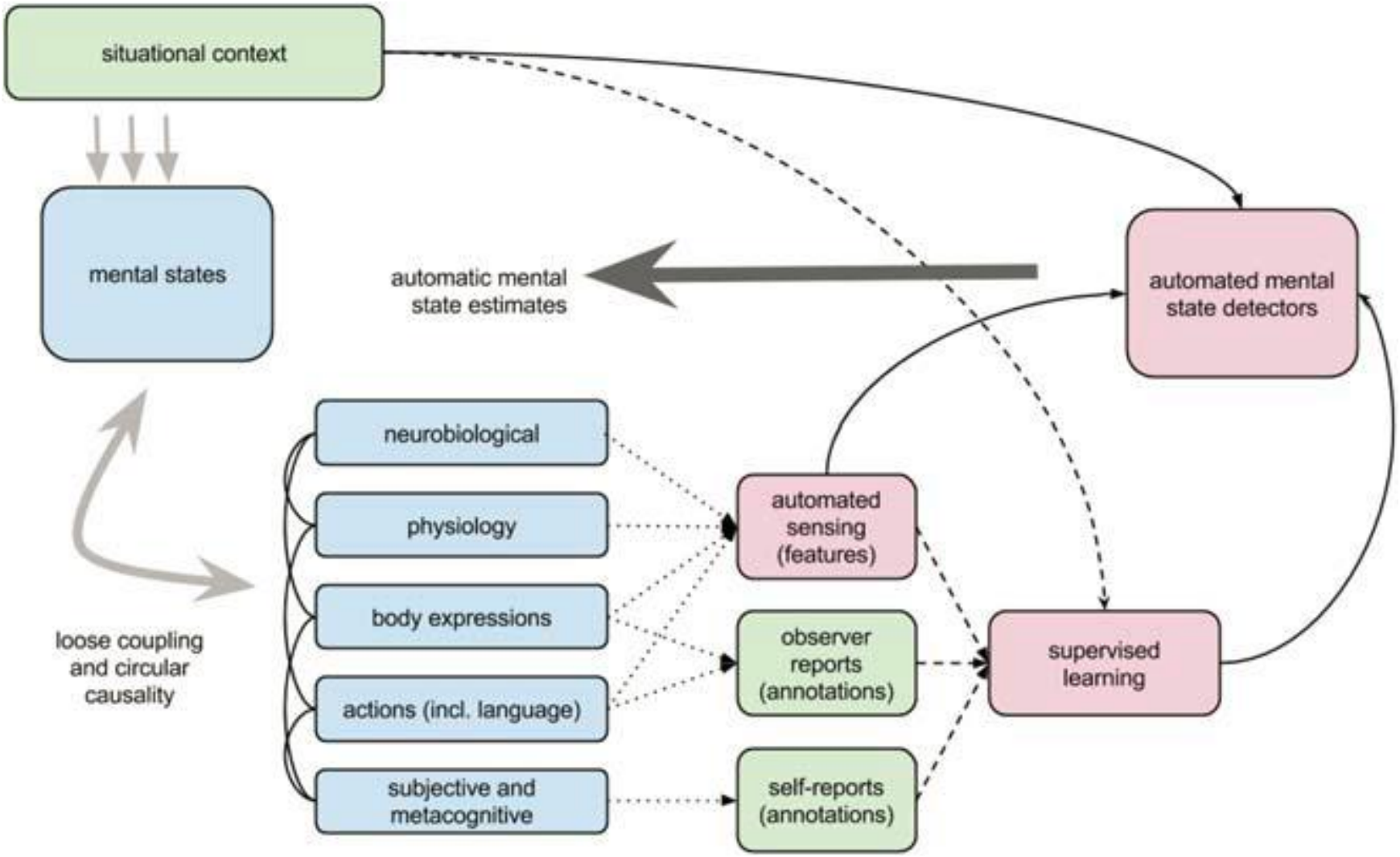
Problem: Automated mental state detection for mental health care

Members: Hriday Nagrani, Yash Longani, Ankit Devani

Code: Mentalhealth02

Problem#2 Automated mental state detection for mental health care

Processes and steps in automatic mental state detection.



Questions to be solved:

1. **Identify the normal and abnormal mental health conditions from cognitive therapy.**

2. **Implement supervised learning and validate using existing data. (For at least 2 mental conditions)**

3. **Generate data from augmentation and prepare the Python API?**

Reading Material

CHAPTER 5

Automated Mental State Detection for Mental Health Care

Sidney K. D'Mello
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INTRODUCTION

Jackson, a 30-year-old male, was recently diagnosed with depression and is receiving weekly cognitive-behavioral therapy (CBT) sessions. He wears a device that records his physiological activity (e.g., electrodermal activity, heart rate variability) as he goes about his everyday routine. At the onset of each CBT session, his therapist inputs his physiological data for the week into a computer program. The program provides an aggregate of Jackson's levels of positive and negative affect as well as pinpoints moments where these responses peaked. The therapist uses this information to monitor Jackson's progress and to dynamically tailor the therapy, for example, by asking Jackson to recall events corresponding to some of the peaks in affect.

Software Platform / Language Used:

Python

Flask API

Thank You