Smart and Connected Health for Precision Medicine

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50% of students rated their mental health below average or poor.

50% received no education on mental health issues prior to college.

30% reported problems with school work due to mental health issues.

Only 7% of parents reported their college students as experiencing mental health issues.

1 in 7 students reported engaged in abnormally reckless behavior.

1 in 4 students reported having suicidal thoughts or feelings.

1 in 3 students reported prolonged periods of depression.

Data from the National Alliance on Mental Illness.
Social Anxiety Live Monitoring

Sense

Detect

Predict

Intervene

△ Anxiety
Rhythm

Affect

Social Isolation

Shaky Hands
Rapid Heartbeat
Excessive Sweating
Weak, shaky voice
Dementia Caregiver Empowerment

Motion and Vocalizations of Dementia Patient

Early Stages of Agitation

Detect

Agitation Based on Causal Environmental and Contextual Factors

Notify Caregiver for Early Agitation Intervention to Prevent Agitation Escalation

Notify Caregiver to Alter the Environment or Context to Prevent Agitation Initiation

Intervene

Environment and Context of Dementia Patient

Sense

Predict
Smart Health in the Link Lab
-- Core Capabilities --

Sense

Detect

Predict

Intervene

Low Power Circuit & System Design

Wireless Communication & Networking

Internet of Things (IoT)

Human Factors

Signal Processing

Machine Learning

Data Science

Cloud & Edge Computing

Model-Based & Data-Driven Control

Safety-Critical System Design & Analysis

Security

Human Factors
Smart Health in the Link Lab
-- Systems and Applications --

Sense

Detect

Predict

Intervene

Wireless

Mobile/Wearable

Large-Scale

Multi-Modal

Self-Powered

Eating

Stress

Critical Health Events

Falls

Unhealthy Behaviors

Rhythm

Critical Health Events

Falls

Artificial Pancreas

Family Eating Dynamics

Bio-Feedback

EMS Notification

Physical Rehabilitation