xavor

naviGAIT Trials & Research

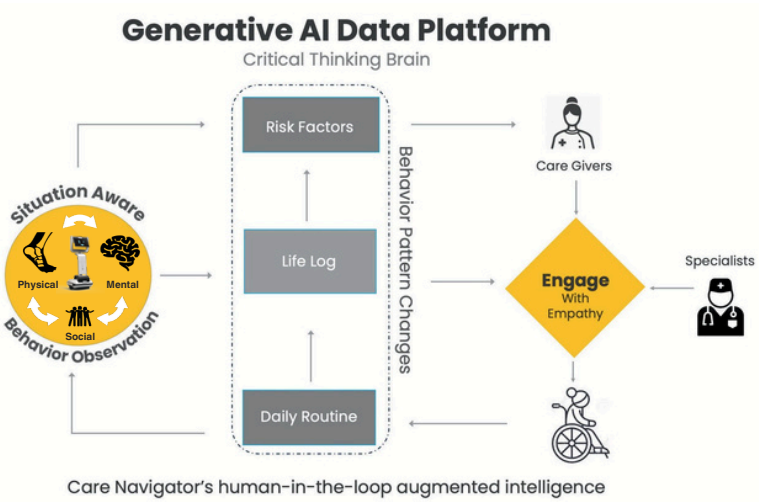
Evidence-Based Aging Decline Curve Management Using Generative AI Superpowers

A Xavor-Incubated Startup Case Study

ENABLE QUALITY AGING WITH AI BEHAVIOR MODELS

We specialize in building AI models for understanding physical, mental, and social behaviors that can improve the quality of life during the three natural stages of decline associated with the aging process - from independent to semi-dependent to fully dependent. Behavior pattern changes allow for early interventions to minimize high-risk episodes requiring costly hospital visits.

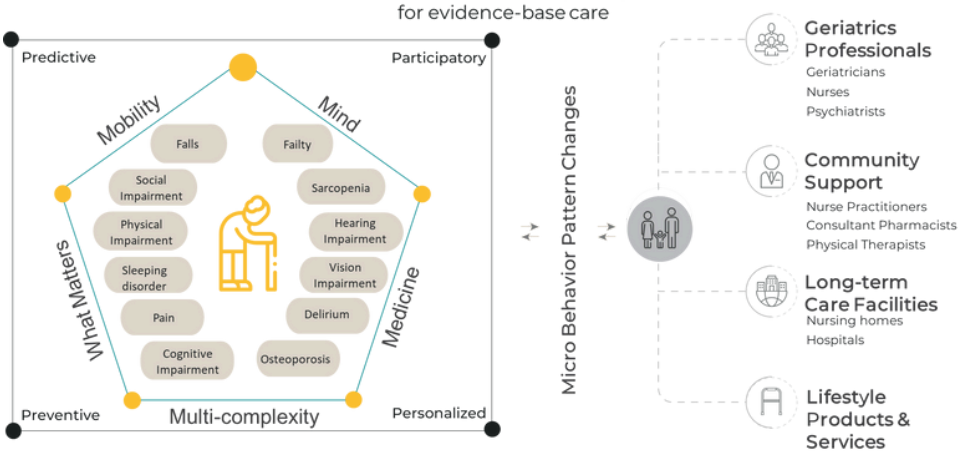
NaviGAIT deploys AI models on edge hardware to maintain privacy. See the back side for available hardware platforms. We also build custom AI models and hardware devices on demand.



We're actively engaged in funded research with healthcare researchers and universities across the U.S. and seeking partners for joint research grants, trials, and pilot projects at healthcare facilities.

Generative AI Superpower

for evidence-base care



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PORTABLE GAITLAB

Our portable GaitLab Stepsense measures dozens of physical behavior parameters (gait, transition, and range of motion) based on the natural movement of the patient for various applications, including: 1) Fall risk assessment, 2) Recovery progress monitoring during physical rehabilitation, and 3) Risky behavior analysis during activities of daily living.

Pose Estimation

Precise computer vision modules for identifying key points on the participant's body.

Gait Analysis

Statistical and machine learning modules for calculating gait parameters.

Mobility Index

Proprietary technology which measures risk of fall based on multiple gait parameters.

EHR - Mobility Insights

Generates detailed insights highlighting precision gait parameters and fall risk level.

NEURODEGENERATIVE DISORDERS AND GAIT PARAMETERS

Neuro Disorder	Alzheimer's Disease	Parkinson's Disease	Huntington's Disease	Amyotrophic Lateral Sclerosis	Multiple Sclerosis
Gait & Biomechanical Manifestation	• Slow gait speed • Reduced step/stride length • Low cadence • Increased inter stride variability • Bradykinesia	• Freezing of gait • Slow walking speed • Small step length • Bradykinesia • Hypertonia (rigidity) • Tremor • Flexed posture • Festination	• Slow gait speed • Reduced stride length • Variable stepping pattern • Increased stance-to-swing ratio	• Small stride length • Decreased cadence • Small single limb support • Increased double limb support • Increased knee flexion at IC • Increased inter-stride variability	• Decreased gait speed • Small step length • Reduced cadence • Reduced joint ROM

INTERNATIONAL EXPERT ADVISORY TEAM

Dr. Ramesh Jain
Founder of Center of Future Health at UCI

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Experience Design Strategist

Dr. Aaron Yao
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Associate Dean for Research at KUMC

Dr. Xiangyang Xin
Socio-technical System Design Strategic Advisor

Dr. Nick Berente
Digital Innovation Expert

DEMENTIA CARE ROBOT

Our Dementia Care Robot is designed to assist caregivers in monitoring late-stage dementia patients to minimize risk factors associated with agitation, hallucination, and anxiety. It reduces the caregiver burden by performing active night shift rounds for patient safety.

1. Empathetic Care Interactions

1.1 Family communication
1.2 Companionship
1.3 Suspicions and delusions
1.4 Depression
1.5 Anxiety and agitation
1.6 Hallucinations
1.7 Memory loss and confusion

2. Dementia Risky Behavior Monitoring

2.1 Agitated head movements
2.2 Risky transitions
2.3 Agitated audio detection
2.4 Agitated body movements
2.5 Wandering
2.6 Routine disruptions

3. Autonomous Passive Assessments

3.1 Gait Analysis
3.2 Vital signs monitoring
3.3 Pain or discomfort detection
3.4 Sleep quality

Onboard Processing Devices

Jetson Orin
STM32 Nucleo Board
ESP32

Robot Sensors

360 degrees LIDAR
RGB + depth camera for AI models
Cliff sensor to prevent falling
Bumper sensors for fail-safe scenarios
Depth camera for automatic docking + obstacle avoidance

Environmental Sensors

Ambient light sensor
Odor sensor (H2S)
Temperature/ humidity/ high-accuracy gas/ barometric pressure sensor

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