universal **mind**

Universal Mind TV (PBC) is a Public Benefit Corporation, whose mission is
**distributing free, digital mental health services to at risk communities globally.**
Incorporated in Delaware, based in Bondi | Eora, serving one planet.

mental **health**

computer vision



open source, transparent, empowering humankind

universalmind

# About Ben Korbel

bachelor of economics | government relations [ university of sydney ]

**My passion is music and purpose is mental health.**

In 2001 I was voted **Australia's #1 DJ** and then spent a decade working and performing in Ibiza. I **owned** and was **managing director** of multiple **national youth music festivals** for upwards of 60,000 people. I've **founded creativity schools** for **at risk youth** and owned digital agencies. I've volunteered running electronic music making and meditation programs for homeless youth.

**I am now building Universal Mind, an entertainment, technology and mental health company, together as one.**

For nearly twenty, years I've been observing the intersection of music, culture, technology and mental health. The technologies have changed, but the mission remains the same: **can we use technology to better understand people and connect them with more meaningful support?**

historical client base

Meta — social impact

VOGUE — education

WME — festivals

NETFLIX — advertising

NSW GOVERNMENT — education

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# Introduction

**Young Veterans are returning with trauma. Can emerging technology help identify people who need support earlier?**

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# Mission

**Universal Mind is exploring whether advances in computer vision, systems biology & privacy preserving AI can assist clinicians in identifying people who may benefit from earlier mental health support.**

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Research

# A Non-Invasive, Systems Biology Framework for Mobile Mental Health Assessment, with Human In The Loop.

Investigating whether smartphone based hyperspectral imaging, autofluorescence, geometry-driven computer vision and systems biology can facilitate detection of biological signatures associated with neurotransmitter based gene transcription. Ethically, in private, as mental health for young veterans.

mental health

computer vision



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# The Mental Health Dilemma.

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# Technology

increasing

# Human Connection

decreasing

Digital Environments & Youth Mental Health (Orygen) Social Media Algorithms and Teen Addiction Youth, Technology & Loneliness The Anxious Generation

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# Mental Illness

## $6T USD Per Annum By 2030

Burden Of Disease Growing Exponentially

(WHO, The Lancet, Australian Federal Government - Productivity Commission)

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# Young People Are Too Embarrassed To Speak Up

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# Young People Are Too Embarrassed To Get Diagnosed

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# Young People Are Too Embarrassed To Seek Help

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# “I’m Embarrassed.”

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# “It’s Too Far To Travel.”

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# “I Can’t Afford It Anyway.”

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# “And I Don’t Want Anyone To Know.”

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# “It’s Only Mental Health.”

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# The Solution

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# Mobile Mental Health Technology Transcends Stigma, Location & Cost

Young people transitioning from military service and their mental health (Phoenix, Orygen)

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# “I’ll Get Assessed In Private, At Home, On My Phone”

I Don’t Even Need An Internet Connection

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# “I’ll Get Recommended Support In Private, Delivered On The Apps I Prefer.”

Apple Music | Instagram | Youtube

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# “I’ll Get Support For Free, Online On My Phone, As Well As The Contact For A Doctor.”

For When I Am Ready

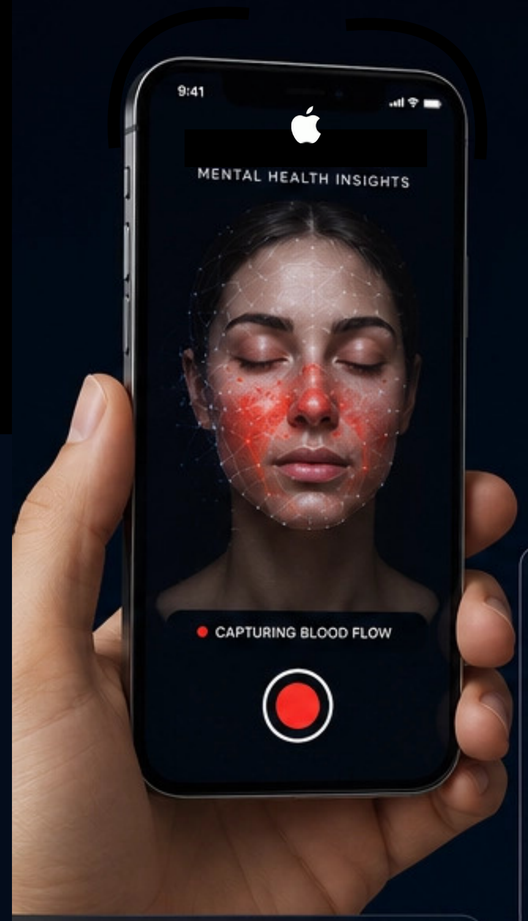
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# Research Vision

# Mobile-First Mental Health

## Neurotransmitter Based Gene Expression Analysis

Turn your smartphone into a non-invasive mental health intelligence platform.




**MOBILE FIRST**

Smartphone Camera
RGB facial video

**1 CAPTURE**
Mobile RGB Blood Flow



Secure on-device capture in seconds

**2 HYPERSPECTRAL RECONSTRUCTION**




Voyage81 + Binah APIs
31-band spectral reconstruction

**3 GEOMETRIC SEARCH & LOCK**



Computationally useful regions for hyperspectral analysis & multimodal weighting

**4 PHYSICS + TRANSCRIPTOMIC VALIDATION**

**HYPER-SEQ**
scRNA-seq ground truth

**MeV-UED**
Electron motion validation

**PhysicsNeMo**
Physics-informed modeling

Multi-layer validation from molecular to subatomic physics

**5 MULTIMODAL AI INFERENCE**



Mamba Vision
Multimodal models
Knowledge graph routing

**6 NEUROTRANSMITTER GENE EXPRESSION OUTPUT**

| | | |
|---|---|---|
| OXTR Oxytocin | 0.87 | High |
| DRD2 Dopamine D2 | 0.74 | Moderate |
| SLC6A4 Serotonin Transporter | 0.69 | Moderate |

CONFIDENCE SCORE

0.86 High Confidence

open source api

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# Prior Arts.

mental health

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CHANGHONG

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2017




# Changhuang H2 Molecular Sensing Smartphone

**A $400 smartphone that detects the molecular structure of food, analyses prescription medication authenticity and additionally measures body mass via the standard camera.**

china | israel

universalmind

2018

# Voyage81 Hyperspectral Software for Smartphones

**Software developed from developers within Israel's Security Services, turning any regular smartphone camera into a 31 band hyperspectral device with 97% accuracy against laboratory results.**

— validated at a pixel level —

israel

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2018

# Apple Watch + Medical Referrals

Apple Watch apps & research programs offer early detection of each of Atrial Fibrillation, Type 2 Diabetes, Anxiety, PTSD and Depression. Further these studies offer free consults with a specialist, via permission, human in the loop and biometric analysis, together as one.

Pioneered by Cargiogram App and its DeepHeart Neural Network

usa

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2022

# Assessing Psychological Safety in real time via Oxytocin, Dopamine & heart rate.

Software API developed from Dr Paul J Zak, built on 20+ years of published research on oxytocin, trust & connection, in collaboration with DARPA. Estimates oxytocin & dopamine via heart rate & Apple Watch.

Data trained from 10,000+ blood withdrawals during intranasal + injections of oxytocin

usa

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2023

# Leading Edge Psychiatric Tests include OXTR Gene Transcription

Involvement of oxytocin receptor deficiency in psychiatric disorders and behavioural abnormalities. Precision psychiatry is developing objective tests and biomarkers for mental illness; OXTR expression, methylation and transcription are emerging psychiatric research targets.

Standford Healhcare Innovation Lab | Standford Center For Precision Mental Health

usa

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2024

# HYPER-Seq
# Hyperspectral Transcriptomics

**A Team at the FabiLab at University of NSW, successfully measured hyperspectral autofluorescence signatures of scRNA during gene transcription.**

australia

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2026

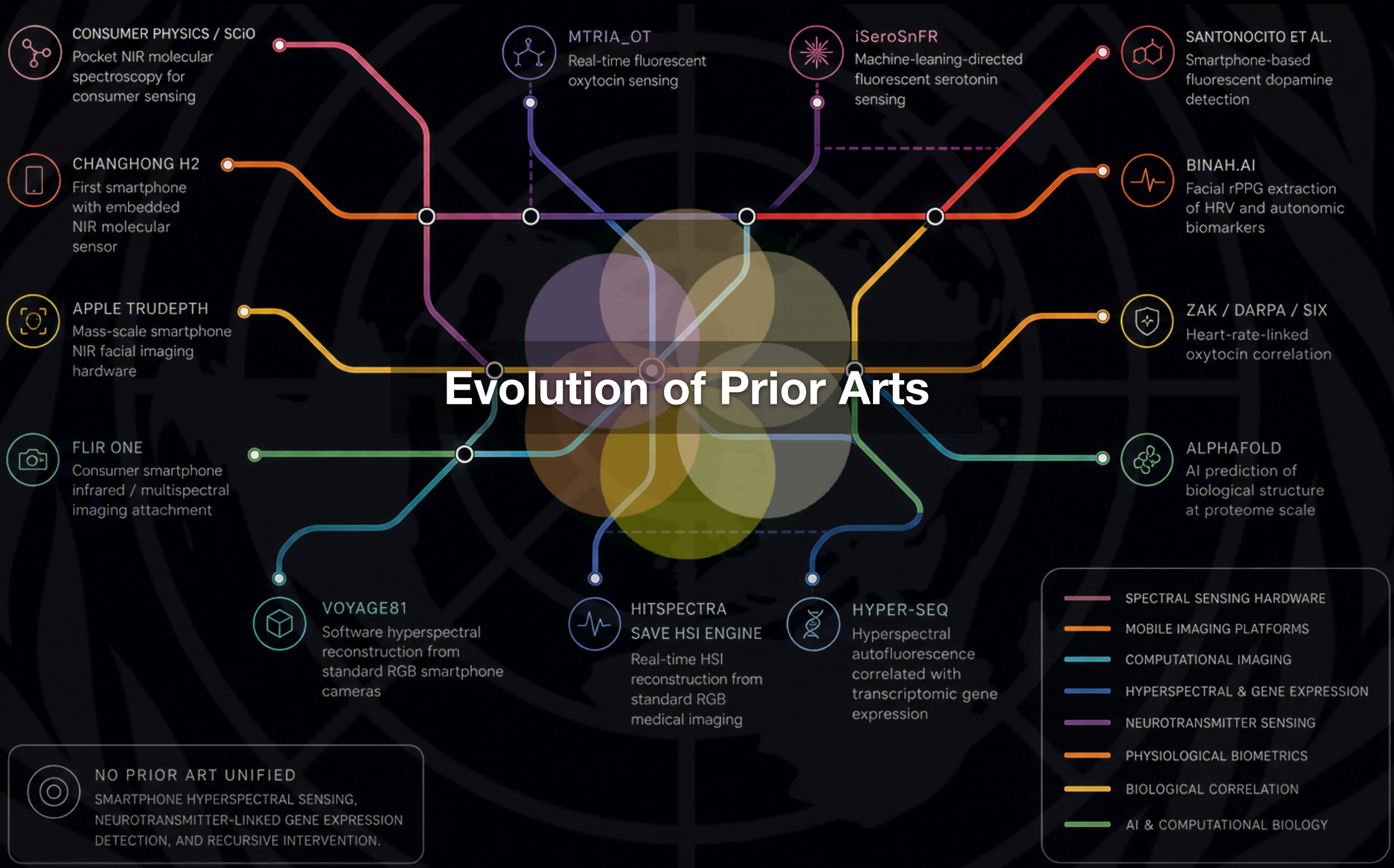
# Doctor In A Vending Machine

250+ booths across China, diagnose 2000+ diseases
with human in the loop. A doctor can dispense medicine remotely,
via video conference after AI does biometric diagnosis.
The AI is trained on > 50M medical consults.

china

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# Evolution of Prior Arts



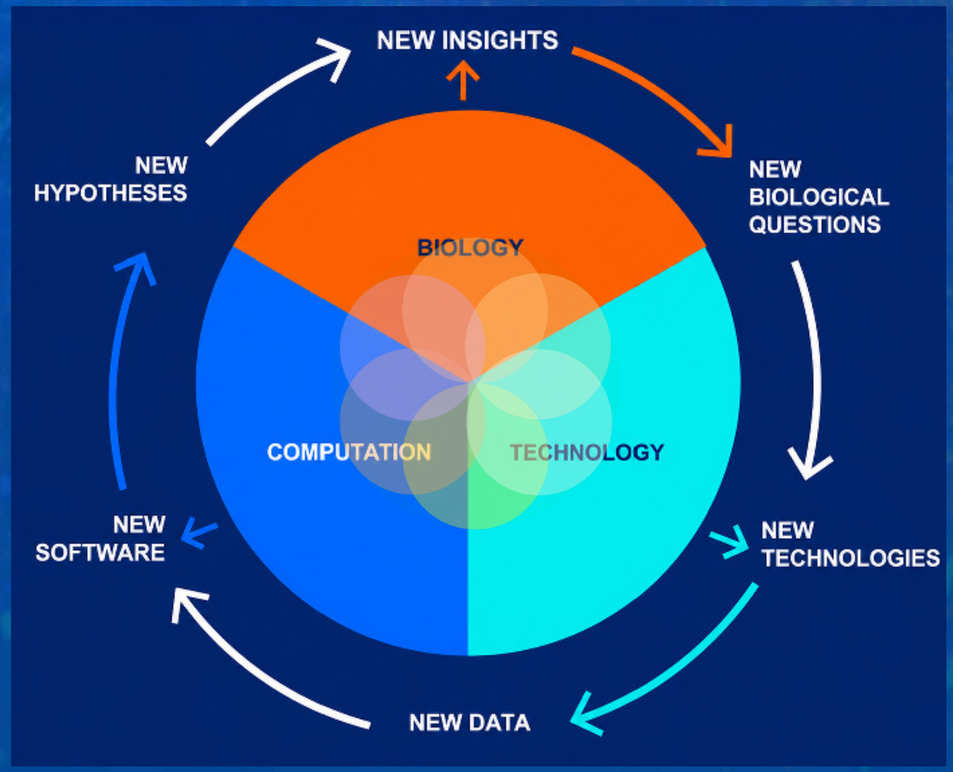
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# Research Process.

## Systems Biology Approach

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# What Is Systems Biology?




**Systems biology is an interdisciplinary approach that combines biology, computer science, and mathematics to study how complex networks of genes, proteins, and cells interact to function as an integrated whole.**

# SYSTEMS BIOLOGY

– interconnected biological systems –

PROTEIN EXPRESSION

OPTICAL SIGNATURES

CELLULAR METABOLISM

gene

transcription

FACIAL BLOOD FLOW

AUTOFLUORESCENCE

AUTONOMIC NERVOUS SYSTEM

SMARTPHONE CAMERA

= Primary Measured Biological Markers

Center = Actual Image Of Atomic Bonds (Via IBM & Science)

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# Research Focus

## Translating laboratory scRNA-Seq hyperspectral ground truth into smartphone-based hyperspectral imaging.




**HYPER-Seq + HITSpectra**

laboratory

scRNA + Facial Blood Flow

**Voyage81**

mobile

Facial Blood Flow

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## Grounding The Research

# How much information survives* across these biological layers?

And can the remaining signal be extracted with sufficient reliability to be clinically useful?

*We use NVIDIA MambaVision to cut through real-world noise like caffeine or body temperature, locking purely onto fast-moving heart and blood frequencies.
Code generation and edge compilation are driven by Mistral's Codestral Mamba for rapid, local deployment.

Our Research Process

# SYSTEMS BIOLOGY SUMMARY

6 vector confidence score

## FACIAL BLOOD FLOW

— Baroreflex Modulated By Oxytocin —

0.111hz rPPG HRV PSD via Mayer Waves

## SYSTEMS BIOLOGY GEOMETRY

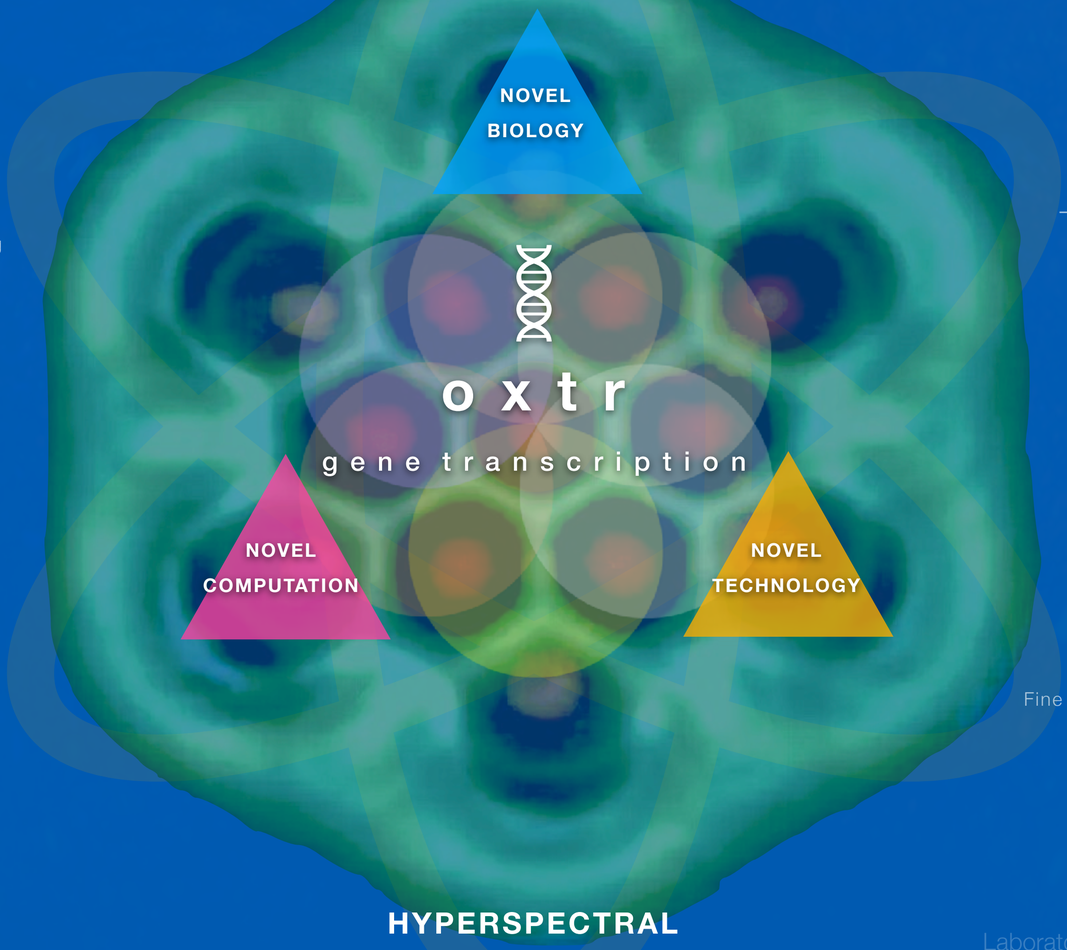
— First Principles Geometric Construction* —

NVIDIA PhysicsNeMo Geometric, Molecular & Quantum Modelling

## HEART RATE

— Oxytocin via HR Blood Trace Signatures —

Dr Paul J Zak x DARPA Patent




## ELECTRON MOTION PATH

— MeV-UED Spectroscopy of scNRA transcription—

SLAC Stanford University

## AUTOFLUORESCENCE

— AF Signatures of Facial Blood Flows —

Fine Tuning NVIDIA MAMBA VISION via Intranasal Oxytocin Video

## HYPERSPECTRAL

— AF Spectra of scRNA Gene Transcription —

HYPER-Seq via UNSW FabiLab

*Certain recurring biological geometries may provide computationally useful regions for spectral analysis and multimodal weighting.

Laboratory-grade scRNA-Seq paired with ≥400-band hyperspectral autofluorescence imaging is used as ground truth to train computer vision models that operate on smartphone-derived 31-band hyperspectral analysis.

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# Responsible **Deployment.**

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# CITIZEN JOURNEY

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## 1. HAPPINESS CHECK-IN

Non-invasive, mental health checkup via video selfie.

## 2. HUMAN REVIEW

Always with human oversight by mental health professionals.

## 3. REFERRAL & SUPPORT

Measurement aids human to issue free, bulk billed referral for specialist or GP, or real time free tele-health during a crisis.

Additional free support pathways provided on the spot - free group chat, free group audio, free group video, free education, free music, tv, film & more.

## 4. HAPPINESS REWARDS

Reward Healthy Behaviour via digital swag & merch from your favourite artist or fashion label.

- exclusive albums, EPs and singles
- event tickets
- digital fashion collectables
- digital subscriptions for yoga, breath work, mindfulness

+ more

— Examples of future content and community partners —

Apple Music, Apple TV+, Vogue, Chanel, LVMH, H&M, Zara, Live Nation, Boiler Room, Alo Yoga, Nagnata, The Upside Sport, PE Nation, David Lynch Foundation + many more

Universal Mind rewards people for showing up, engaging in their mental health. We don't reward a particular emotion, mood or mental health status. It's about authenticity and honesty.

**I Am Invited**

**(Opt In)**

# Human In The Loop

## 1. On-Device Capture

- Facial blood flow
- rPPG
- Spectral Imaging
- Motion stability
- Environmental normalisation*

*Raw camera feed - no iOS post processing

## 2. Multimodal Signal Analysis

- Hyperspectral imaging
- Autofluorescence analysis
- Systems biology modelling
- Cross-signal confidence weighting

## 3. Probabilistic Risk Estimation

- Biological state estimation
- Pattern correlation
- Scientific significance weighting
- Confidence scoring
- Future diagnostic SaMD pathway
- FDA & TGA approval required*

*Class 1 / 2a Triage Support Tool

## 4. Human In-The-Loop Review

- Clinician oversight
- Telehealth escalation
- Deferred with user consent
- No autonomous diagnosis

## 5. Referral Recommendation

Medicare Bulk Billed Routing:

- Triage
- Escalation
- Specialist Referral
- GP Referral

Additional Free Support routing:

- Free Education
- Free Online Resources
- Free Group Chat
- Free Group Video
- Free Group Audio
- Free Music
- Free TV/Film

**Free Services via Media Partnerships eg. Apple, Meta, Snap**

## 6. Optional Telehealth

- Psychotherapist appointment
- Psychologist appointment
- Clinical psychiatrist appointment
- GP appointment

**Bulk Billed | Free Services via Medicare Partnership**

*Scientific Significance Score is a open source machine-learning weighting framework designed to probabilistically rank multimodal biological signals, genomic associations and diagnostic correlations for clinician review.

**— on-device processing where possible —**

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# Data **Ethics.**

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**No internet connection required**

My phone performs the analysis **locally.**

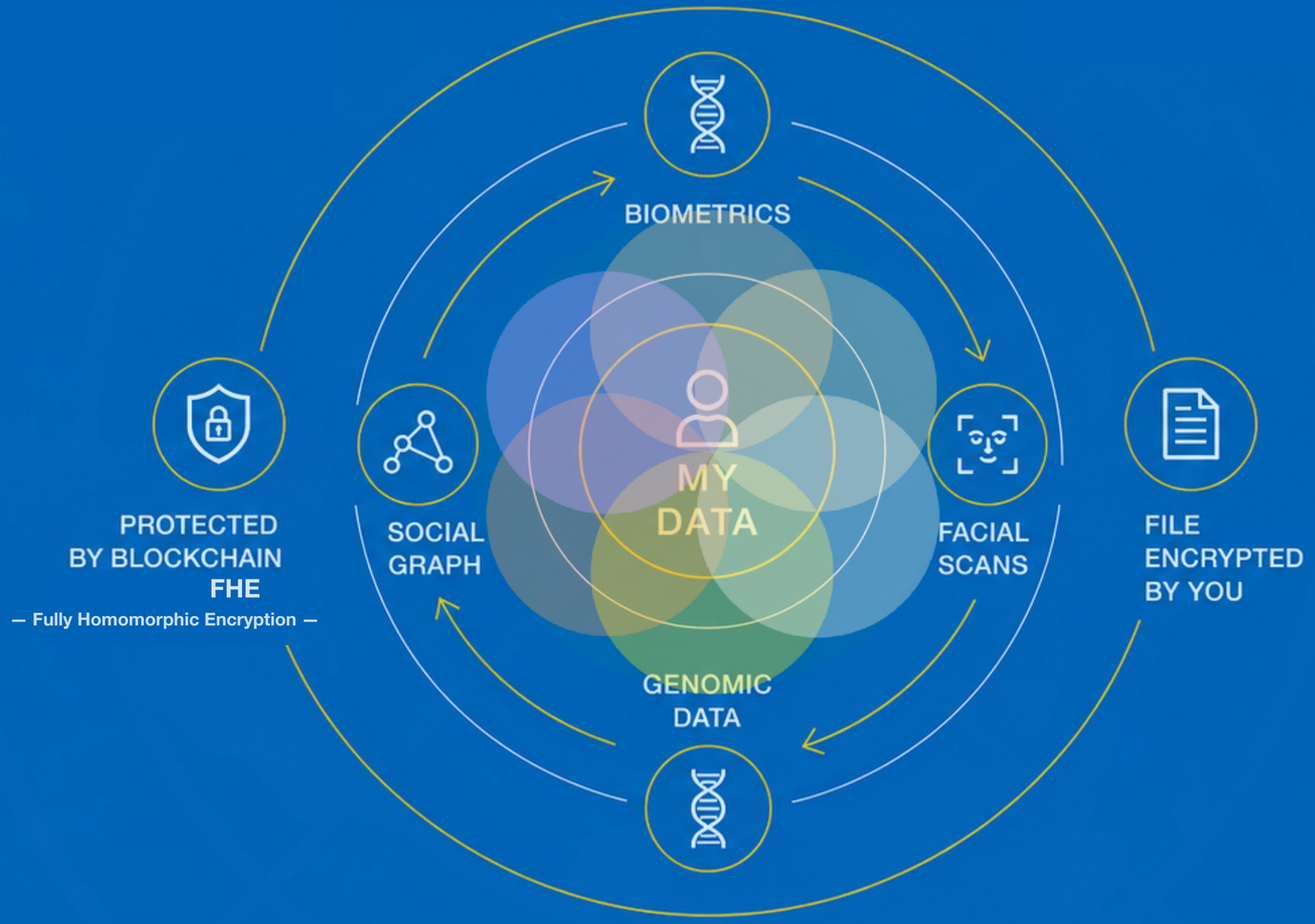
**I own my health data.**



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***I own** my health data.*

Center for Humane Technology




mental health

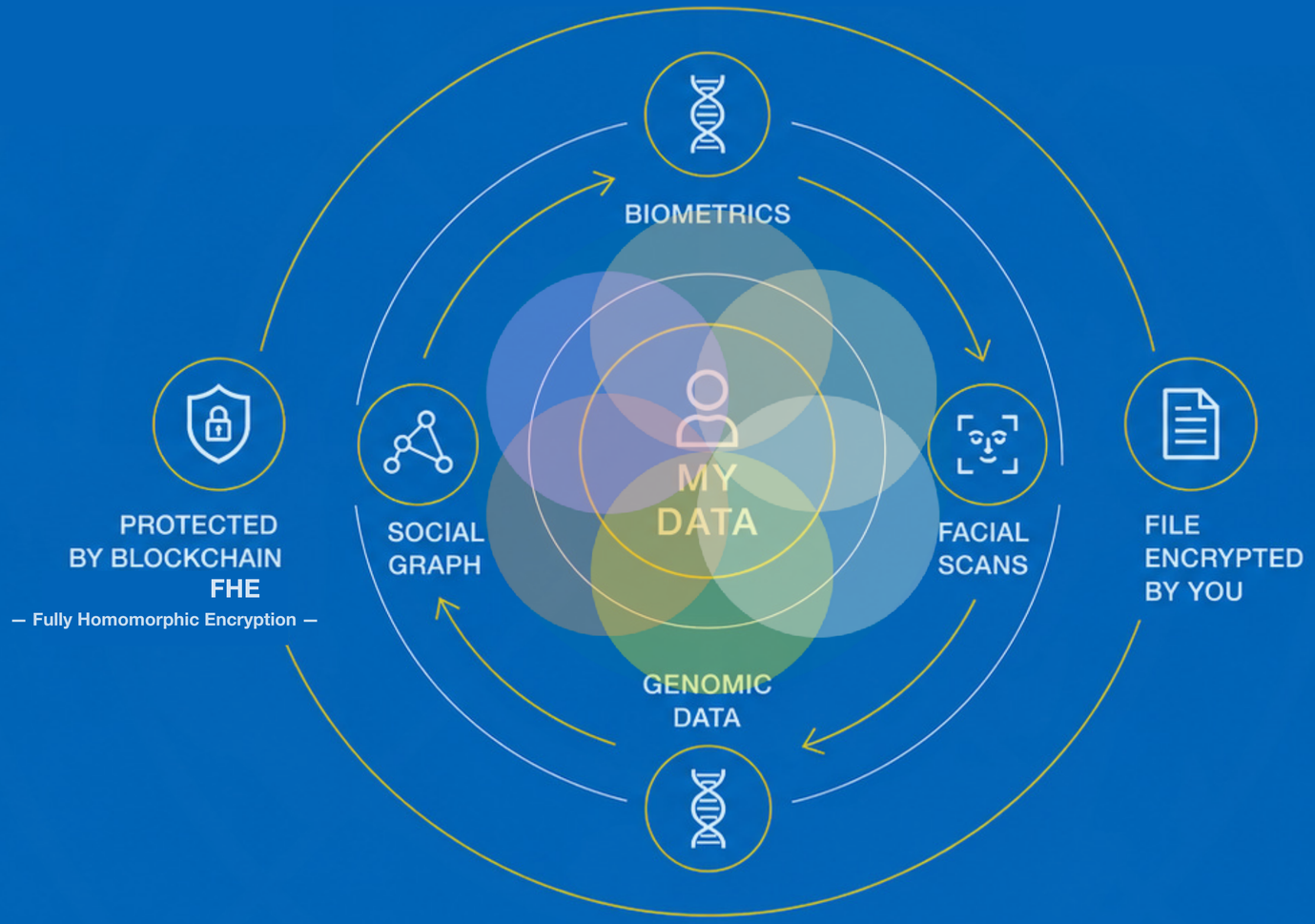
computer vision

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***I own** my health data.*

Center for Humane Technology

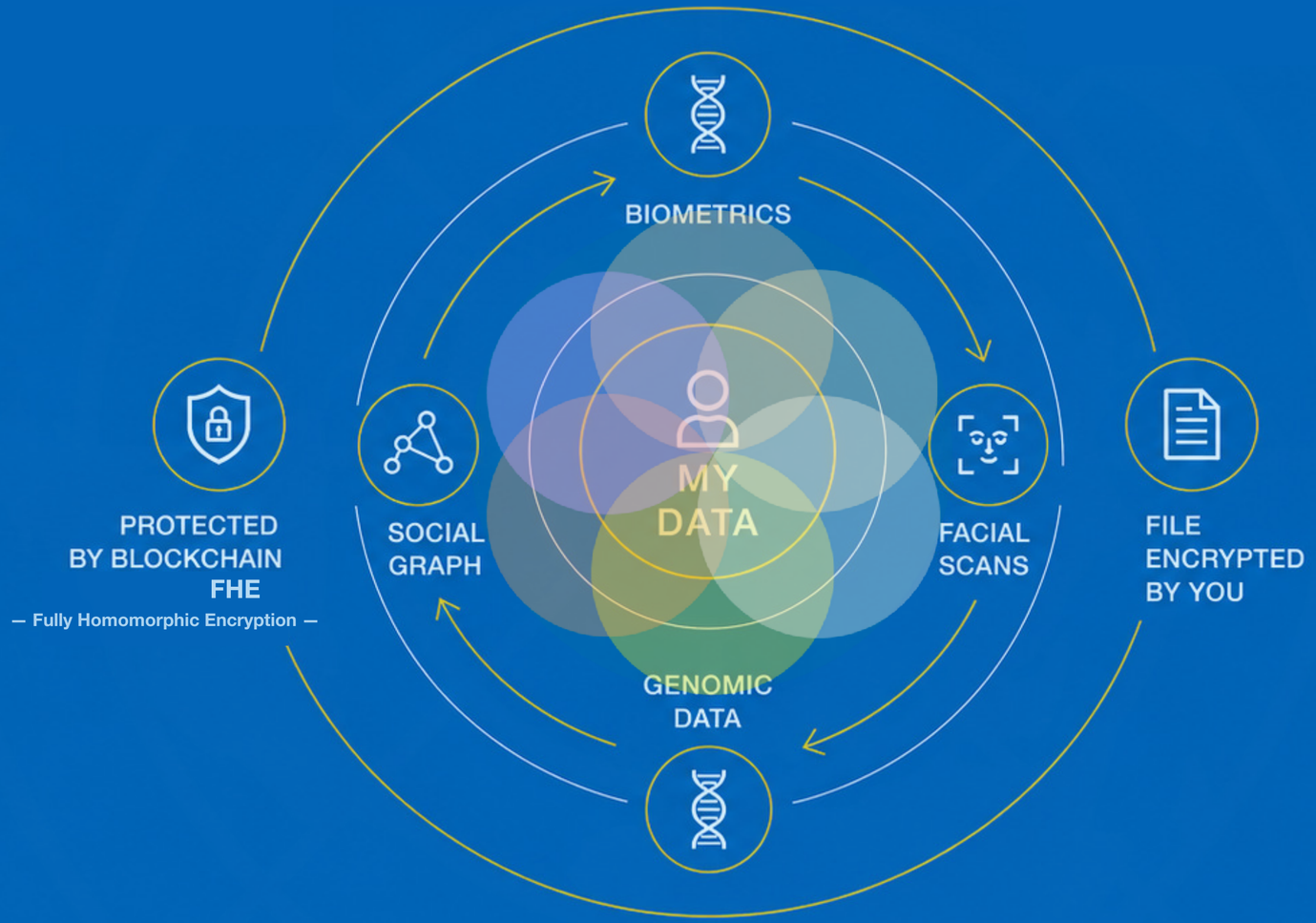



*With permission, businesses & governments are rewarded to **innovate** upon my data.*

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# Privacy-first infrastructure for mental health

Center for Humane Technology




Privacy preserving interoperability for people, business & government

HYPERLEDGER INDY > ZAMA FHE > {fhenix*} FHE > STORJ S3 > aws HealthOmics Enterprise

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# Partnership **Opportunities.**

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NVIDIA. Google DeepMind OpenAI ANTHROP\C

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| Category | Lab | Location |
| --- | --- | --- |
| **People** | **University Of NSW Fabilab, Garvan Institute**<br>scRNA Seq via Hyperseq \| mRNA sequencing | **Sydney** |
| **Business** | **NVIDIA, Google DeepMind, Anthropic, OpenAI**<br>Computer Vision \| Algorithm \| Advanced Fine Tuning of Frontier Models | **California** |
| **Government** | **Data61 CSIRO**<br>Computer Vision \| Decentralised Data | **Sydney** |

Proposed **Partners**

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| Category | Lab | Location |
| --- | --- | --- |
| **Ethics** | **The Ethics Centre, Centre For Humane Technology**<br>Mental Health Ethics \| Digital Technology Ethics | **Sydney, California** |
| **Impact** | **Centre For Social Impact**<br>Theory Of Change \| Socio-Economic Impact Modelling | **Sydney** |
| **Mental Health** | **Orygen**<br>Mental Health Clinical Research | **Melbourne** |

Proposed **Partners**

# Proposed **Advisory Circle**



## Prof Patrick McGorry (AO)

YOUTH MENTAL HEALTH + CLINICAL TRANSLATION

## Ben Korbel

FOUNDER + EXECUTIVE DIRECTOR*



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## Peter Joseph (AM)

ETHICS + GOVERNANCE

## NVIDIA

COMPUTER VISION + AI INFRASTRUCTURE

## Data61 CSIRO

NATIONAL RESEARCH + COMMERCIALISATION



## Fabio Zanzini (UNSW)

SYSTEMS BIOLOGY + GROUND TRUTH GENOMICS

## Priscilla Chan Zuckerberg

AI x GENOMICS + FRONTIER RESEARCH



## Jo Kinghorn

PHILANTHROPY + STRATEGIC FUNDING

*Ben brings together people, business & government across medicine, technology and culture, for mental health.

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# Roadmap.

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# Phase Alpha iPhone

## Integrating With iOS

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# Phase Beta Agents

Autonomous AI Focused 24/7 On Mental Health

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# Phase Gamma Robotics

## Machines That Can Feel

Genomic Signal Processing For IoT

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# Phase Epsilon Knowledge Graph

Mental Health Genomic Graph Recommending
Streaming Media & Social Media, Together As One

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# Phase Zulu

Gene Network Expansion

Nature (OXTR Parent Pathways) Frontiers In (OXTR Modulates DRD2)

Transcript Element Listening System

Pathway of transcription of neurotransmitter based genes

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# Roadmap Preview

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**Universal Mind proposes a genomic biological signal-processing framework that augments existing smartphone, tablet, and IoT ecosystems.**

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# Music For Mental Health

— Mental Health Checkups Integrated Within Entertainment & Culture —




**API PARTNERSHIP***

**Apple Music x UN**

**Apple Music Happiness Face Filters By Vogue x Apple Music Artists**

Feat. Bjork, Lady Gaga, Beyoncé, Solange, Kelela, Peggy Gou, Caroline Polacheck & More

**Recommending Music For Mental Health**

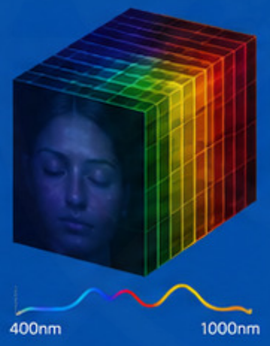
*Proposed

**1 CAPTURE**
Mobile RGB Blood Flow



Secure on-device capture in seconds

**2 HYPERSPECTRAL RECONSTRUCTION**




Voyage81 + Binah APIs 31-band spectral reconstruction

**3 GEOMETRIC SEARCH & LOCK**



Computationally useful regions for hyperspectral analysis & multimodal weighting

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**HYPER-SEQ**
scRNA-seq ground truth

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**5 MULTIMODAL AI INFERENCE**



Mamba Vision
Multimodal models
Knowledge graph routing

**6 NEUROTRANSMITTER GENE EXPRESSION OUTPUT**

| | | |
|---|---|---|
| OXTR Oxytocin | 0.87 | High |
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| SLC6A4 Serotonin Transporter | 0.69 | Moderate |

CONFIDENCE SCORE

0.86 High Confidence

\+

*Proposed Partnerships

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**Universal Mind proposes a genomic biological signal-processing framework that augments existing AI, robotics and world-model ecosystems.**

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# Robotics For Mental Health

Trauma Informed Storytelling [ Powered Via Genomics ]



Meet Newton

**The Robotics Software Platform**

Our research robot software platform that powers different robot hardware platforms.

A friendly companion that helps young people feel safe, heard and supported.

NVIDIA
ACCELERATED COMPUTE
PHYSICS + AI INFRASTRUCTURE

Disney
STORYTELLING + ENGAGEMENT
TRUST + HUMAN CONNECTION

Google DeepMind
ADVANCED AI MODELS
MULTIMODAL INTELLIGENCE

## REAL-WORLD CONTEXT

Supporting young people affected by war trauma and displacement.

Working alongside clinicians and therapists to deliver scalable, evidence-based care.



UNHCR
The UN Refugee Agency

Partnering with UNHCR to deliver mental health support in new communities.

## OUR MISSION

Make high-quality mental health support accessible to every young person, everywhere.

## SOLVING THE BIG THREE – TOGETHER

### STIGMA

Robots like Newton provide a non-judgmental, private space for young people to open up.

Safe conversations.

No stigma.

### ACCESSIBILITY

Reach young people anywhere – in schools, camps, shelters or remote communities.

Care without borders.

### COST

AI + robotics scale support efficiently, augmenting clinicians and reducing long-term system costs.

More impact. Lower cost.

## CLINICIAN & THERAPIST SUPPORT

- Intelligent session summaries and emotional state tracking
- Evidence-based insights to support diagnosis and treatment planning
- Secure tools that enhance (not replace) human care

## REAL-WORLD IMPACT

- Early identification of anxiety, PTSD and depression risk
- Continuous monitoring of progress and relapse indicators
- Better outcomes for young people and communities

## BUILT ON NVIDIA

DGX Cloud Compute · Omniverse Simulation · PhysicsNeMo Physics AI · Jetson Edge AI

## POWERED BY DEEPMIND

Gemini Models Multimodal AI · AlphaFold Biology Models · Graph Networks Knowledge AI

## DISNEY EXPERIENCE

Character & Emotional Engagement · Immersive Stories for Healing · Designing Trust, Safety & Joy

*Proposed Partnerships

UNHCR
The UN Refugee Agency

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Research Summary

# A Non-Invasive, Systems Biology Framework for Mobile Mental Health Assessment, with Human In The Loop.

Investigating whether smartphone based hyperspectral imaging, autofluorescence, geometry-driven computer vision and systems biology can facilitate detection of biological signatures associated with neurotransmitter based gene transcription. Ethically, in private, as mental health for young veterans.

mental health

computer vision



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# Next Steps.

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| Question | Person |
| --- | --- |
| Is this clinically meaningful? | Prof Patrick McGorry (AO) |
| Is this ethical? | Peter Joseph (AM) |
| Is the biology plausible? | Fabio Zanzini (UNSW) |
| Can the signal be extracted? | NVIDIA + DATA61 CSIRO |
| Can it assist young veterans with trauma? | Phoenix Australia |
| Can it be funded? | Jo Kinghorn |
| Can it scale culturally? | Mark Poston + David Levy (WME) |
| Can it reach millions? | Evan Spiegel (Snapchat) |

# Key Questions To Validate

Prior to any professional engagement, deal memo or equity structure, you receive $1000AUD each, donated to a mental health organisation of your choice. For answering the above one question, for approx 1hr of your valued time.



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# Mental Health with young people on their terms.

At **home**, in **private**, for **free**.

+

Proposed Partnerships

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# Contact.

**Ben Korbel** | Founder & CEO
**Universal Mind TV, Public Benefit Corporation**

**bk@universalmind.tv | +61 418 626 793**

*Ben brings together people, business & government across medicine, technology and culture, for mental health.*