UCSF Startups and Innovation in

Digital Health

90-second Snapshot Seizure Forecasting Method

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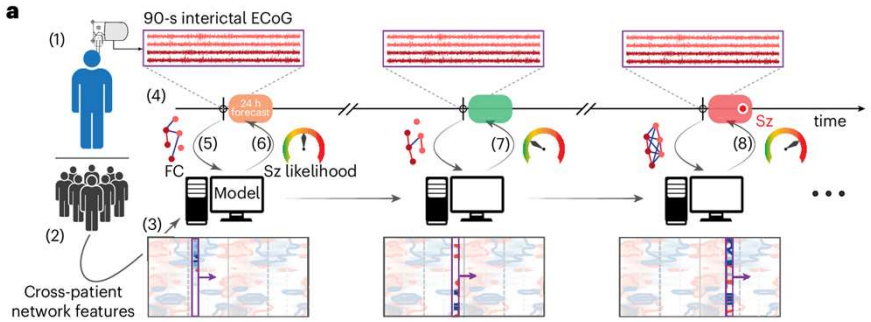
A generalizable algorithm using 90s snapshot of ECoG measurement can forecast likelihood of seizure in the next 24 hour



DISEASE/INDICATION: Epilepsy

UNMET NEED: The unpredictability of seizures greatly impacts patients QoL. However, seizure forecasting is not routinely done

- Cycle-based methods of seizure forecasting exist but require months of recording to forecast seizure, resulting in increased patient burden, large data storage requirements, and high costs

PRODUCT: A generalizable algorithm paired with existing devices to forecast seizure likelihood using 90-second recordings of ECoG activity

COMPETITIVE ADVANTAGE/DIFFERENTIATION:

- Lower patient burden without months-long monitoring
- Reduced data storage requirements and cost savings

DATA:

- Retrospective study demonstrates this method can forecast seizure as accurately as existing cycle-based methods
- Larger, prospective study is ongoing. Additional work will also examine applicability in different types of epilepsy and compatibility with less invasive monitoring devices

Digital Health Contacts to Contracts – Accelerated!

Andrew Auerbach, MD
Board Chair, Co-founder
Professor of Medicine
andy@kuretic.com

Novel platform to lower friction between health systems and digital health tool vendors, leading to faster adoption of tools with better outcomes

PROBLEM:

- Health Systems face overwhelming risks in adopting new Digital Health tools
  - Costs ~$80K + weeks for each vendor discovery and diligence
  - Onboarding takes forever
  - No performance monitoring

SOLUTION:

- 100s of proprietary data points for each tool with pre-recorded demos and confidential peer feedback → select tools with confidence
- Automated checklists and workflow automation → speed up onboarding
- Performance monitoring → improve outcomes

TRACTION:

- IP licensed from UC
- Signing up Beta customers

LEARN MORE:

MATE BIOSERVICES

From genes to phenotype in every research pipeline

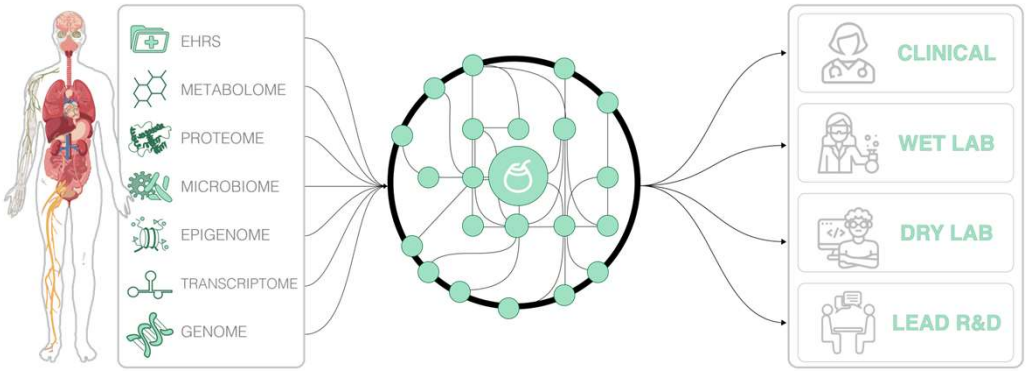
UCSF

Charlotte Nelson
Co-founder & CEO,
Mate Bioservices
UCSF BMI Alum

Sergio Baranzini
Co-founder, Mate Bioservices
UCSF Professor of Neurology

PROBLEM:

- Biological complexity is resisted instead of embraced in biomedical research.
- Data and knowledge silos impede scientific breakthroughs.



SOLUTION:

- Mate's core engine offers unparalleled data access - harmonized, normalized, & seamlessly packaged.
- Intuitive explainable AI interfaces for wet and dry lab scientists tackle months of research in minutes.

TRACTION:

- Supported by the NSF Convergence Accelerator
- Leveraged by NASA, academic institutions, and pharma companies of all sizes, worldwide

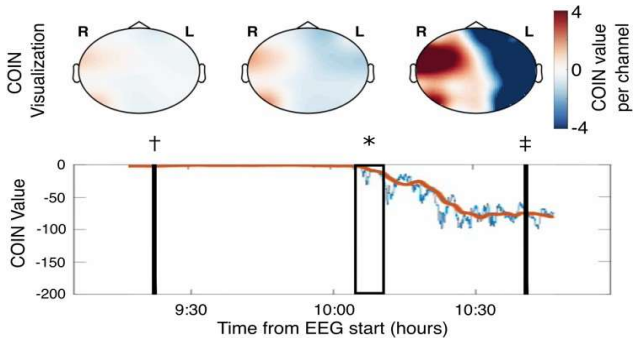
LEARN MORE:

NeuroSentry

Intuitive EEG-based stroke monitoring system

Mauro Cafarelli, MD
UCSF Assistant Professor,
Neurologist-Intensivist

Edilberto Amorin, MD
UCSF Assistant Professor,
Neurologist-Intensivist



Visualize and characterize stroke. In this image, COIN captures the onset of stroke while on heart-lung bypass.

DISEASE/INDICATION: Intraoperative stroke monitoring for cardiac and carotid surgeries

UNMET NEED: 35,000 annual in-hospital strokes in adults and children occur in association with a procedure of heart, aorta, or neck. Delay in stroke diagnosis is pervasive, sometimes hours or days. Intubation is associated with longer delays. In-hospital strokes treated less often than out-of-hospital strokes.

PRODUCT: NeuroSentry is a turn-key software solution for EEG-based stroke detection

COMPETITIVE ADVANTAGE/DIFFERENTIATION:

- Removes the need for an EEG expert
- Easily interpretable with minimal training requirement
- Can be adapted for any EEG hardware platform

DATA: Preclinical validation completed

SparsaAI

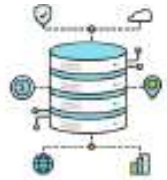
Unlocking the Value in the AI Stack

UCSF

Gilmer Valdes, PhD
Co-Founder, Sparsa
Associate Professor,
Department of Radiation Oncology and Epidemiology and Biostatistics

Foundation Models
on Edge, Mobile

AI Computing
Alignment, Tuning, Inference



Data Management
Storage, Analysis

PROBLEM:

- The computational burden of AI is increasing exponentially, impacting Energy consumption and compute costs.
- Such computational burden could also worsen the climate crisis.

SOLUTION:

- For any given computational budget, the SparsaAI™ algorithm delivers the optimal network architecture.
- Algorithm characterizes the optimal tradeoff between budget and architecture.

STATUS:

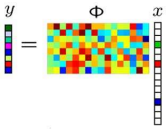
- Spinning out

LEARN MORE:

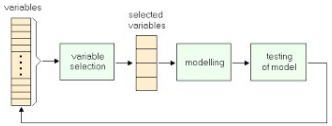
SparsaAI™ unlocks the power of Sparse Regularization in Artificial Intelligence

Sparsity has enabled key technological advances.

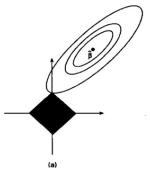
Everything else being equal, smaller is better[1, 2].



Compressed Sensing



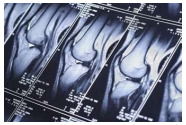
Variable Selection



Lasso
(e.g. glmnet)

Selected applications

Healthcare

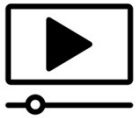


Medical Imaging
MRI, CT, PET

Molecular Analysis
Microarray DNA

Consumer

Speech
Recognition, Enhancement



Video
Compression, Streaming

1. Occam's Razor.
2. James-Stein's theorem.
3. Due in part to the inherent non-linearity of neural networks.
4. Network architecture = design, nodes, weights.

But AI has posed unique challenges.

- Trend towards extreme model sizes.
- Inability to find optimal architecture[3].

SparsaAI™

For any given computational budget, the SparsaAI™ algorithm delivers the optimal network architecture[4].

- Fully characterizes size vs. performance.
- Automatically compresses models while retaining same or better performance.

Selected applications

Foundation Models
on Cloud, Mobile, Edge

AI Computing
Alignment, Tuning, Inference

Data Management
Storage, Analysis

Unlimited, creative analytical solutions within minutes

Ralph Gonzales, MD
Chief Innovation Officer
UCSF Health
UCSF Clinical Innovation Center

PROBLEM:

- Timely and accurate data is a must to track, explore, and forecast clinical initiatives
- Current data collection tools may be cumbersome, delayed, or unavailable

SOLUTION: A self-service "value calculator" built in partnership with tag.bio analytics start-up

- **Avoid waiting weeks for data requests**: Point-of-care use enables users to avoid waiting for data pulls
- **Limitless potential to explore innovative solutions**: Platform draws directly from UCSF financial data
- **Creative cohort comparisons**: Cohort feature allows inquiry of user-defined parameters
- **Drive real-time decision making**: Queries return in seconds, allowing for rapid inquiry and iteration

TRACTION:

- Using tag.bio platform, **$3.7M** inpatient costs avoided in reducing short stay admissions from ED

Trial Library

A technology company on a mission to advance health equity by expanding access to cancer precision medicine

UCSF

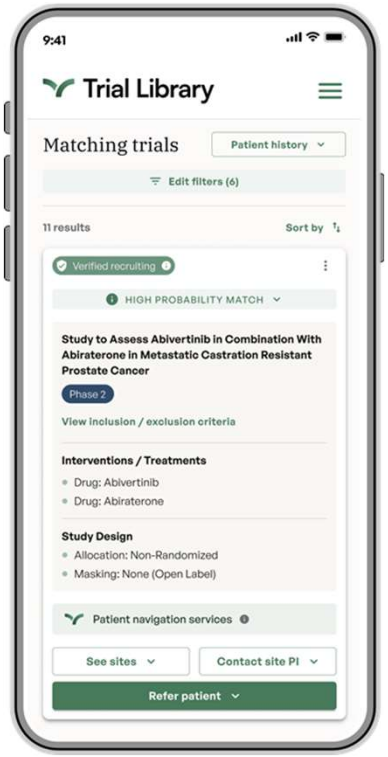
Hala Borno,MD
CEO & Founder,
Trial Library
UCSF Associate Professor
Medical Oncologist

PROBLEM:

- Oncology clinical trial recruitment remains inefficient, with only 13% of US oncologists participating in research.
- Inequities persist and <7% eligible patients enroll on trials.

SOLUTION:

- Trial Library's platform enables rapid healthcare provider decision support and patient navigation to accelerate oncology recruitment.



TRACTION:

- Healthcare provider network >1500 physicians in the United States
- Preferred recruitment platform for several large global biopharma clients.

LEARN MORE:

zebraMD

Your AI Assistant for Rare and Genetic Disease

UCSF

Kat Schmolly, MD
Founder & CEO
zebraMD
Affiliate researcher at the UCSF Real World Evidence Lab
UCSF Innovator

PROBLEM:

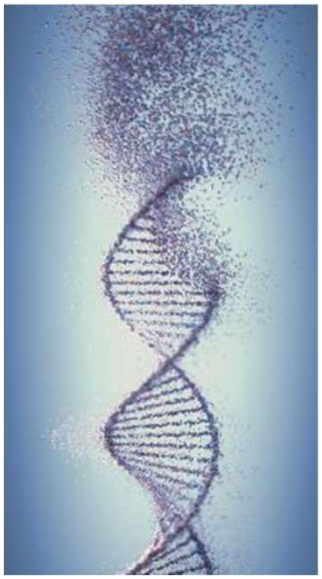
- 1 in 10 people have a rare/genetic disease - 50% are children, 30% of them will die before their 5th birthday.
- Takes 12-15 years to get diagnosed
- It costs $30k/year/patient **more** to manage an RG pt compared to an average chronic disease patient (heart disease, AD, etc).
- Lack of specialty access and knowledge of EBM care as major reasons.

SOLUTION:

- An EHR integrated and solo standing app using algorithms made of EHR data + existing research to reduce diagnostic delays and improve care ***at the point of care.***
- Improves patient outcomes, reduces healthcare costs.
- Especially for community care!

TRACTION:

- UCSF Innovations Ventures company
- 3 patents with associated publications
- First pharma customer for $100k/year
- NSF Phase I SBIR grant for $275k
- Acceptance to Nucleate & Equalize



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