Brain-Computer Interface (BCI)

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Introduction

Bridging Neural Signals and Human Communication

Our proprietary brain-computer interface (BCI) connects the human brain directly to natural language-based AI systems.

Why? Millions of patients lose speech after stroke or injury. We want to help them communicate again—restoring the ability to speak, to move, and to connect.

How? A customizable film that rests on the surface of the brain, paired with AI that understands natural language. This seamless link will transform unintelligible speech signals into understandable communication.

What makes us different? Ours is ***minimally invasive***—a safer path to the brain for broad use, as it does not require open-brain surgery.

Objectives

From Lab to Life-Changing Impact

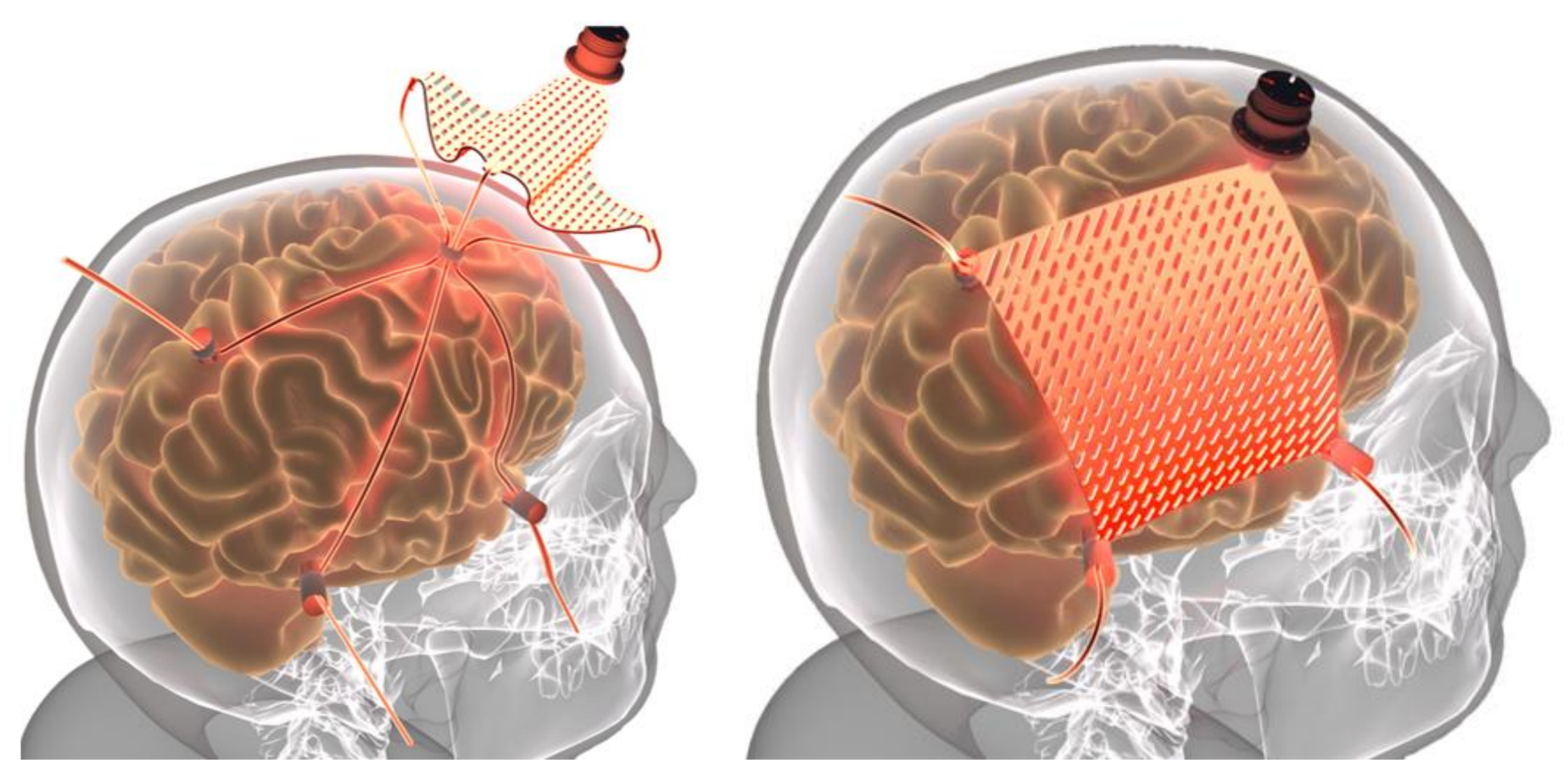
We are developing a platform that prioritizes patient safety and surgical elegance from the start. Our focus is on creating a stable, high-fidelity BCI that can be placed with minimal disruption to the patient's life.

Who? For patients and families with neurological conditions such as stroke, aphasia, and spinal cord injury.

Why engineering matters: We design an ultra-thin, flexible film that sits on the brain without damaging it—a precision engineering challenge of our time.

Our vision: Make BCIs safe and available in hospitals—advancing BCI technology responsibly from laboratory to real life.

Methodology



Our invention is a Minimally Invasive ECoG (MI-ECoG) sensor array, thinner than a human hair (10μm)—so flexible that it moves along the brain surface and attaches conformally.

No open-brain surgery: We slide it onto the brain through small holes (fixed at 4 points). This flexible polyimide device that records high-density cortical signals is a breakthrough.

It works in animals: We tested it in beagle dogs—it was safe, stable, and achieved ***96% accuracy*** in auditory frequency classification, while also demonstrating walking gait prediction from cortical signals.

Our organic thin-film transistor (OTFT) technology gives cleaner thought data, achieving contact resistance (25 $\Omega\cdot$cm) and carrier mobilities of ~12.5 $cm^2V^{-1}s^{-1}$, enabling EGOFET-based neural preamplifiers that ***triple the signal-to-noise ratio*** over bare electrodes.

See our Work

Join our Community

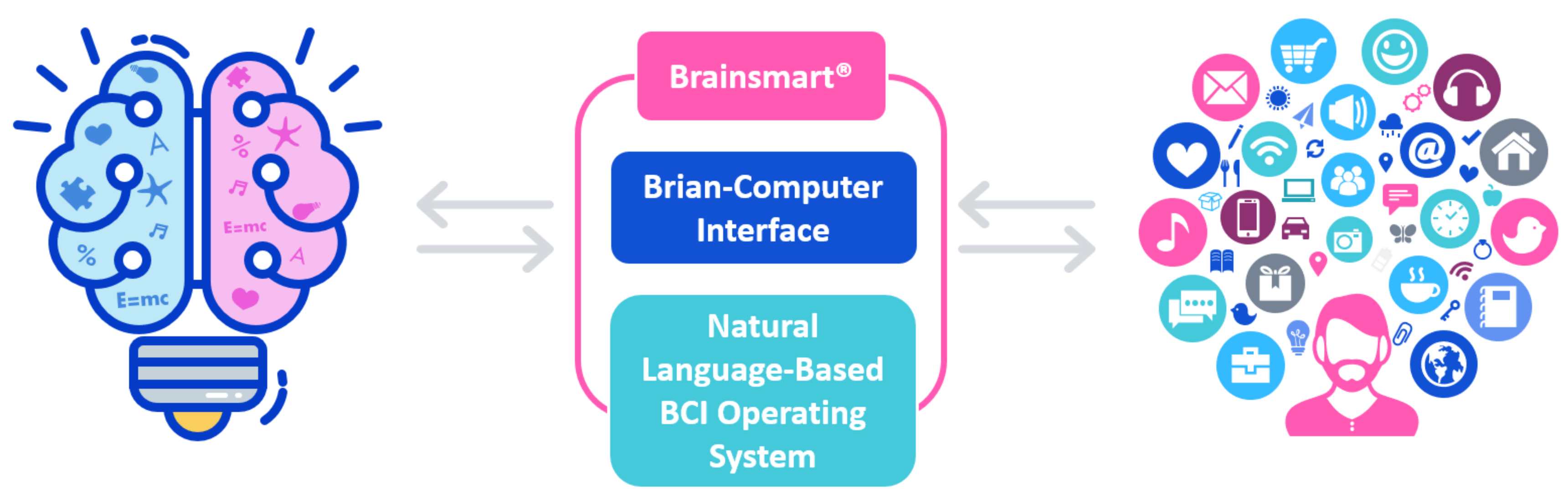
Accomplishments

256-channel sensor array—one of the highest-density MI-ECoG devices.

Connecting the human brain directly to AI: Successfully decoding music hearing and speaking words.

Animal studies and first-in-human trial completed: Safety confirmed and NMPA-approved for short-term clinical trial.

Brainsmart Technology founded, with GMP facility established by Q4 2026; raised over 15M USD, with foundry ready by 2027.



Outlooks

Next: Mandarin speech decoding at 1,024 channels—aiming for <5% error rate. That's conversational level.

Then: A fully implantable device—hidden under the scalp, wirelessly charged—no battery changes ever.

Clinical trials start in 2027—we are on track for global safety studies.

Ultimately: A voice for those who cannot speak—for Cantonese and Mandarin patients all over the world.