



Brain-Machine Technology :
Unlocking New Possibilities for Human Life

About BrainCo

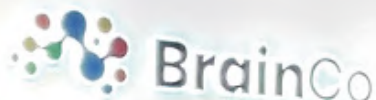
Founded in 2015, BrainCo is the first Chinese team incubated by Harvard Innovation Lab and has emerged as a global leader in non-invasive brain-computer interface (BCI) technology. With \$400 million in R&D funding, BrainCo leads the non-invasive BCI sector, while Elon Musk's Neuralink, the best-funded company in the BCI area, dominates the invasive sector. It is also the first "unicorn" in China's BCI industry.

Guided by the mission of "Brain-machine technology: unlocking new possibilities for human life," BrainCo has spent the past decade transforming cutting-edge lab research into impactful real-world applications. Its research and development team consists of leading scientists, with over 70% being alumni of world-renowned institutions such as Harvard, MIT, Tsinghua University, Peking University, and other top-tier universities. The company holds a robust portfolio of over 730 patent applications and over 480 granted patents, including more than 270 core invention patents, ranking it among the global leaders in the BCI industry.

2015 BrainCo was successfully incubated by the Harvard Innovation Lab. In the same year, it achieved first place in the Harvard China Forum Entrepreneurship Competition.

2016 BrainCo made its debut at the International Consumer Electronics Show(CES) and garnered acclaim from renowned media outlets such as USA Today.

BrainCo was honored with the prestigious gold award at Mass Challenge, the world's largest startup accelerator competition.



波士頓
Boston
2015

2017 BrainCo achieved a groundbreaking breakthrough in the technology of Brain-Computer Interface. The development of a novel electrode material, known as the "Solid Gel Electrode," was brought into mass production, overcoming the challenge of collecting brain signals on a large scale with high accuracy.

2018 The BrainCo Intelligent Bionic Hand developed by BrainCo enabled an upper-limb amputee to play the piano with the world-renowned pianist Lang Lang, outside of experimental conditions.

2019 The Chinese Academy of Sciences released the global TOP20 list of artificial intelligence companies, and BrainCo, as a representative enterprise in the field of Brain-Computer Interface, was included.

BrainCo has been honored as the "China Rising Star of 2019" by Deloitte.

The BrainCo Intelligent Bionic Hand was named as one of the 100 Best Inventions by Time magazine, heralded as a groundbreaking pioneer in the field of brain-machine interfaces.

2020 BrainCo was honored as one of the 39 most influential companies in China's educational technology sector, according to CB Insights.

BrainCo has been listed as one of the "50 Smartest Companies," by MIT Technology Review.

2021 BrainCo has partnered with the National Children's Medical Center (Shanghai) in a collaborative research project on portable neurofeedback training using brain-machine interfaces specifically designed for children's holistic brain development.

Capital Medical University Affiliated Beijing Anding Hospital has signed a comprehensive cooperation agreement with BrainCo, focusing on depression screening as the main research direction.

2022 BrainCo has successfully produced 100,000 units of the high-precision Brain-Computer Interface product, achieving a breakthrough in the engineering and technical challenges of consumer-level Brain-Computer Interface devices.

BrainCo Intelligent Bionic Hand, developed by the company, has received approval for market release from the FDA.

2023 BrainCo has been selected by Forbes China for the Top 100 Global Digital Trade Industry Companies list, ranking in the Top 25 for innovation in digital technology trade.

2024 The prosthetic knee product received FDA clearance and was assigned several PDAC-approved L-codes, making it eligible for reimbursement under the U.S. health insurance system.

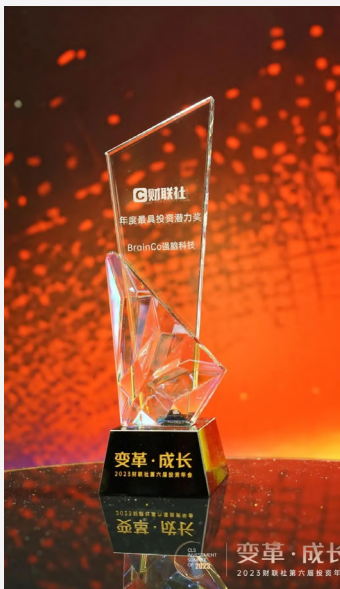
BrainCo's launch of the Bionic Dexterous Hand expands the commercial application landscape for embodied intelligence.



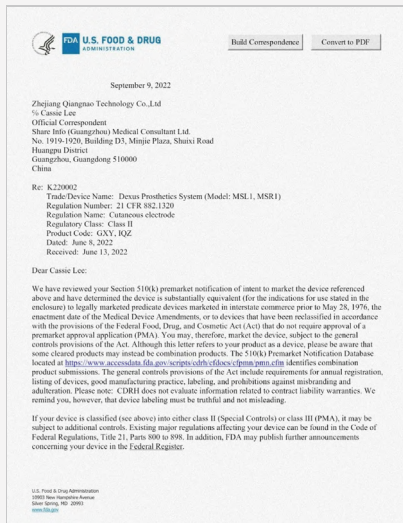
2019
CES Innovation Awards



2022
Included in the list of 84 Most Socially Influential Startups in China by Fortune



2023
Awarded the Most Promising Investment Award by Caixin Press of Shanghai United Media Group

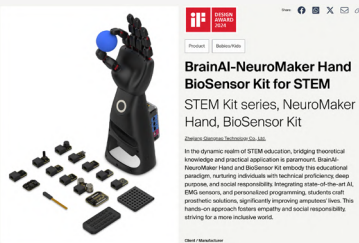


September 2022
BrainCo Intelligent Prosthetic Hand receives approval from the U.S. Food and Drug Administration (FDA)

2023 全球数字技术最具创新力企业 Top 25 (排名不分先后，按企业名称首字母排序)																								
1	Adobe	6	NVIDIA	11	百度集团	16	科大讯飞	21	小米集团															
2	Advanced Intelligence Group	7	OpenAI	12	大华股份	17	联想集团	22	新华三集团															
3	Alphabet	8	Opensea	13	大疆创新	18	强脑科技	23	展友网络															
4	Meta	9	Ripple	14	海康威视	19	腾讯科技	24	中科院达															
5	Microsoft	10	阿里云	15	华为	20	意适科技	25	字节跳动															

发布单位：福布斯

2023
Included in Forbes China's list of Top 100 Global Digital Trade Industry Companies (Ranked Top 25 Most Innovative Companies in Digital Technology Trade)



2024
Seven products, including the BrainAI-Neuro-Maker Hand BioSensor Kit for STEM win the iF Design Award

BrainCo

Intelligent Bionic Hand

The BrainCo Intelligent Bionic Hand is a cutting-edge smart product that seamlessly integrates Brain-Computer Interface technology with advanced artificial intelligence algorithms.

This Bionic Hand is capable of detecting the wearer's neural and muscular electrical signals, allowing it to identify the wearer's intended movements. The system then translates these intentions into precise actions of the prosthetic hand, enabling dexterous, intuitive control—making the hand move as if it were the wearer's own.

The BrainCo Intelligent Bionic Hand offers independent movement of all five fingers and coordinated finger actions, providing essential daily gestures commonly needed by individuals with upper-limb amputations. It allows users to control the prosthetic hand with the same degree of flexibility as their own natural hand.

In 2019, the BrainCo Intelligent Bionic Hand was selected as one of the "100 Best Inventions" by Time magazine.

In 2022, the BrainCo Intelligent Bionic Hand made its debut at the Beijing 2022 Winter Paralympic Games, assisting disabled athletes in the torch relay. In the same year, it received approval from the U.S. Food and Drug Administration (FDA).

In 2023, disabled athletes used the BrainCo Intelligent Bionic Hand to light the torch tower of the 4th Asian Para Games in Hangzhou.

TIME
100 Best
Inventions of
2019

CES
2019/2020
Innovation
Awards

Red Dot
Award: Best
of the Best
(2020)





Advanced phantom-limb motor imagery contro

Based on artificial intelligence algorithms
Intuitive control, unlimited gestures

Brain-machine interface technology

8-channel electromyography signal acquisition system
Accurate signal detection and rapid response

Bionic dexterity design

Anti-collision fingers and two-dimensional thumbs
Bionic, natural, reliable and powerful

Net weight

512g

Similar to the natural hand weight of adult men

Precise operation

0.1mm

Thin enough to pinch up tissues, business cards,
and other objects

Time to open or close

0.8s

Real-time sensing of neural and
electromyography signals

Human-machine interface socket

3D modeling

Customized design, comfortable fit, and easy wear



Available in multiple sizes and colors to meet the needs
of diverse users



the U.S. Food and Drug Administra-
tion (FDA) 510(k) Clearance
510(k) Number: K220002



Inspection report of national Rehabilitation AIDS
Quality Inspection Center
Report Number: 233/2019





A girl who lost her right hand due to an accident was able to complete a piano performance on the same stage as Lang Lang with the help of the BrainCo Intelligent Bionic Hand.



The BrainCo Intelligent Bionic Hand was showcased at the 2022 Beijing Winter Paralympic Games, assisting disabled athletes in completing the torch relay.



Disabled athletes used the BrainCo Intelligent Bionic Hand to light the torch tower at the 4th Asian Para Games in Hangzhou.

BrainCo

Bionic Dexterous Hand

The BrainCo Bionic Dexterous Hand is ergonomically designed to mimic the human hand. Weighing only 383g and measuring just 16 x 7.6 cm, it is ultra-lightweight and compact. It achieves sub-millimeter precision with an accuracy of 0.1mm, a grip force of 5KG, and can bear loads up to 20 kg—resulting in an impressive grip-to-weight ratio of 52.6. Equipped with multimodal tactile sensors, it supports a wide voltage range of 64V and multiple communication protocols, unlocking infinite possibilities for embodied intelligent dexterous manipulation.



Compact



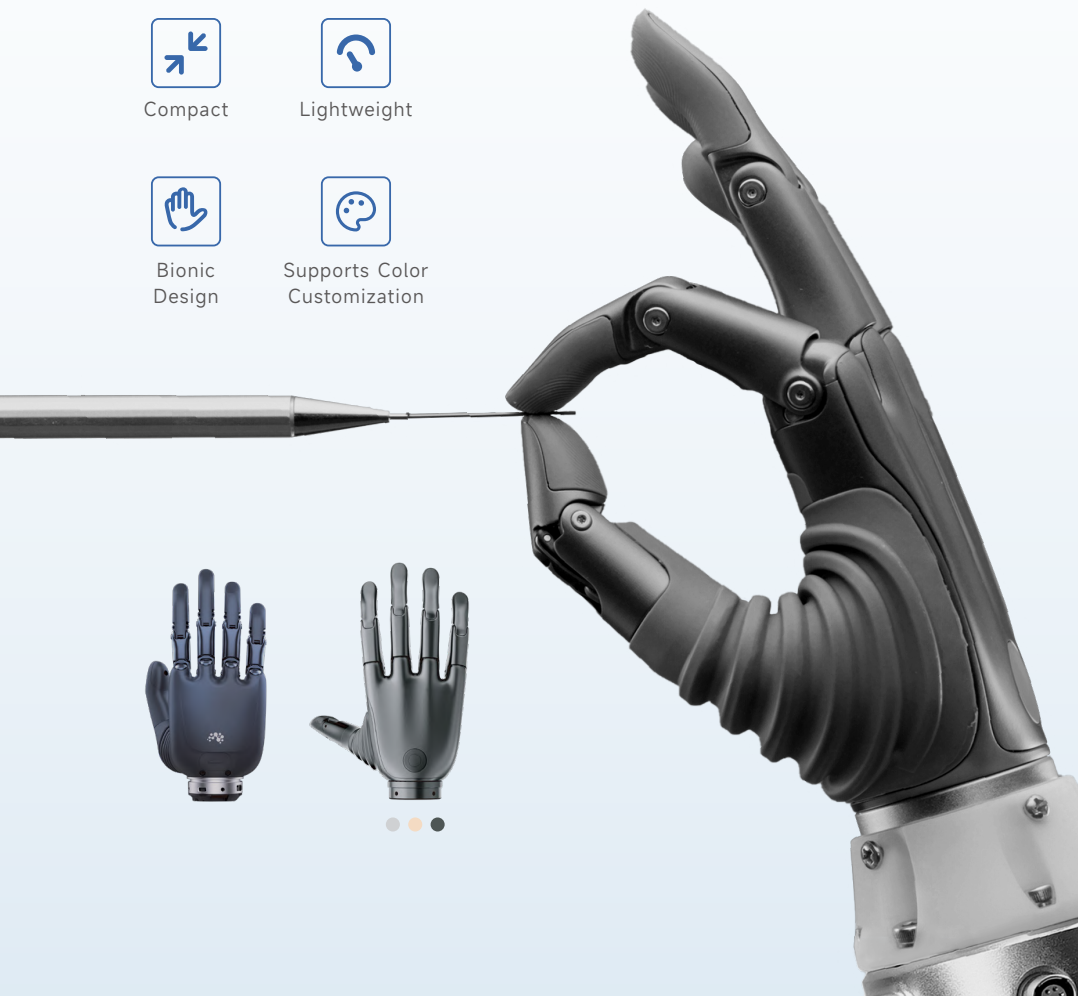
Lightweight



Bionic
Design



Supports Color
Customization



Active Joints

6

Repeatability

0.1°

Degrees of
Freedom (DOF)

11

Full Hand Load
Capacity

≥20 kg

Five-Finger
Grip Force

≥50 N

Single-Finger
Pinch Force

≥15 N

Wide Voltage
Range

12-64 V

Communication
Interfaces

**485 / CANfd /
EtherCAT**

*Data provided by BrainCo Lab



BrainCo

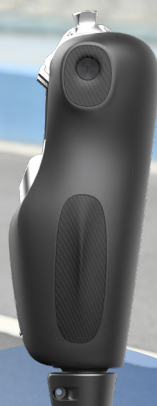
Intelligent Bionic Knee M3

The BrainCo Intelligent Bionic Knee M3 is an innovative smart prosthetic knee joint developed through advanced Brain-Computer Interface technology, integrating intelligent algorithms and precision control systems.

Equipped with a sophisticated sensor system, the M3 collects real-time motion data, processes it through advanced algorithms, and converts it into commands to control the hydraulic system. This enables dynamic, real-time adaptation to various movement scenarios, providing above-knee amputees with the freedom of motion required for everyday activities.

The BrainCo Intelligent Bionic Knee M3 allows users to walk comfortably, safely, and freely, with control that mimics the natural movement of a human leg.

- At the 4th Asian Para Games in Hangzhou, athlete Ye Jinyan completed the torch handover during the relay ceremony while wearing the BrainCo Intelligent Bionic Knee M3.



Function Button

User-friendly button design, linked with the app to switch modes with one touch, while supporting manual locking—making it easier to put on the socket.

Sleep Mode

When the product is idle, the M3 automatically enters sleep mode to save power, helping it last longer.

Vibration Feedback

The M3's vibration feedback function allows users to clearly perceive product status changes in real time—such as scene switching, sleep mode activation or wake-up, low battery, or malfunctions..

Bending Angle Upgrade

The bending angle can reach 126°-128°.

Hydraulic System

The hydraulic system has undergone dynamic load testing, resulting in significantly improved durability, control, and robustness compared to the previous generation.

Battery Life

On a 4-hour charge, the M3 can be used for more than 4 days at 5,000 steps per day.

Multi-Sensor Fusion

Integrating gyroscope, position sensor, myoelectric sensor, etc. The multi-sensor array can collect data in real time, with a maximum sampling frequency of 1,000Hz.

Intelligent Algorithm

Enhanced gait recognition accuracy, optimized gait control, allows users to walk closer to a physiological gait.



More Possibilities in Daily Life and Sports

Custom Sport Modes



Standing



Walking



Running



Sitting down



Kneeling
Position



Sitting
Position



Standing
up



Walking up stairs
(step over step)



Adjustable
Walking Speed



One-Key Lock
Function



Crossing over
obstacles



Walking down stairs
(step over step)



Leaning
and Relaxing



Walking on a Slope with
Natural Weight Distribution

Within the app, 5 custom modes are provided with adjustable parameters for different types of activities.

Explore a wider range of possibilities in both sports and everyday life with the help of this app.



Cycling



Elliptical



Yoga



Golf



Ping-pong

StarKids

Wearable BCI System for Social Communication Training

The StarKids Wearable BCI System for Social Communication Training utilizes wearable Brain-Computer Interface (BCI) technology, combined with specialized educational content developed by a team of experts, including Board-Certified Behavior Analysts (BCBA) and doctors in the field of cognitive psychology.

Designed for children with autism spectrum disorder (ASD), this system addresses the inherent neurological developmental challenges associated with the condition. It employs an intelligent closed-loop neurofeedback training approach that enhances social communication and behavioral skills from the inside out, while also improving the effectiveness of traditional behavior training.

The features of the training system include a portable and comfortable wearable device, engaging and entertaining training content, and personalized training programs formulated by smart software. It is applicable for both institutional and home-based intervention and can also be used in parallel with various behavioral intervention methods. Therefore, this innovative intervention, which targets core developmental challenges, supports the rehabilitation of children, maximizes their potential for recovery, and effectively makes the most of the golden intervention window for ASD.

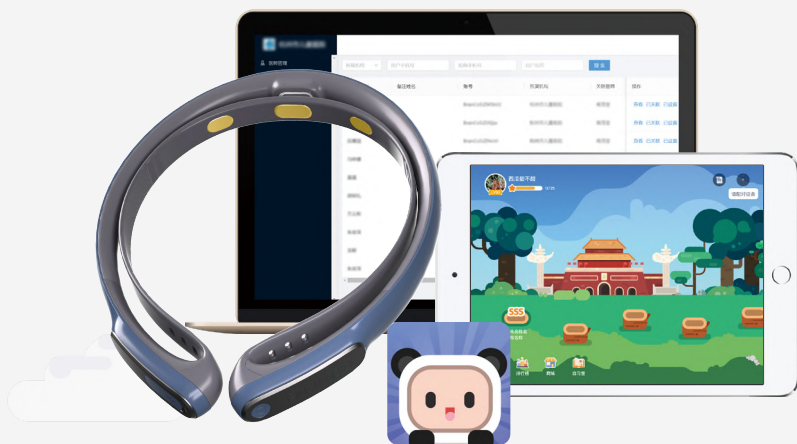




FocusXin

Brain-Computer Interface Attention Training System

The FocusXin Brain-Computer Interface Attention Training System is a Brain-Computer Interface (BCI) neurofeedback-based solution designed to address attention-related issues in children. It is specifically tailored for children who require improvement in attention and executive functioning skills.



Reliable

- Digital intervention technology
- Neurofeedback training method
- Trackable training results



Empowered training

- Advanced Brain-Computer Interface technology
- Precise measurement of attentional state
- Personalized training for children at different developmental levels



User-friendly

- Designed with a child-friendly interface
- Flexible and comfortable to wear
- Children can independently complete the training



Engaging practices

- Gamified training mode
- Captures children's interest
- Encourages consistent, long-term practice

Extensive domestic and international research has demonstrated that the neurofeedback training methodology embedded in this product is suitable for children with attentional deficits and executive function problems*. Neurofeedback training has been shown to reduce excessive theta waves and high-frequency beta waves in brain activity, while enhancing sensorimotor rhythm (SMR) activity. It enhances the brain's core executive functions and the underlying capacity to control attention, thus enhancing children's daily functioning, learning efficiency, and social interactions.



*Partial research materials:
Bagherzadeh, Y., Baldauf, D., Pantazis, D., & Desimone, R. (2020). Alpha synchrony and the neurofeedback control of spatial attention. *Neuron*, 105(3), 577–587.e5. <https://doi.org/10.1016/j.neuron.2019.11.001>

Kosmyna, N., & Maes, P. (2019). AttentiU: An EEG-based closed-loop biofeedback system for real-time monitoring and improvement of engagement for personalized learning. *Sensors*, 19(23), 5200. <https://doi.org/10.3390/s19245200>

Steiner, N. J., Frenette, E. C., Rene, K. M., Brennan, R. T., & Perrin, E. C. (2014). In-school neurofeedback training for ADHD: Sustained improvements from a randomized control trial. *Pediatrics*, 133(3), 483–492. <https://doi.org/10.1542/peds.2013-2059>

Focus

Concentration Enhancement System

The Focus Concentration Enhancement System incorporates a portable electroencephalogram (EEG) reading device, which boasts over 95% accuracy, comparable to professional EEG detection instruments such as g.tec.* By integrating with the FocusWorld software system and utilizing neurofeedback training methods, the Focus Concentration Enhancement System effectively enhances concentration.



On November 27, 2019, the renowned scientific journal *Sensors* published a paper by Nataliya Kosmyrna and Pattie Maes, two scholars from MIT Media Lab. In this study, the researchers recruited 48 adult participants, assigned them learning tasks, and conducted group testing. The results of the paper showed that participants using the system improved their test scores by nearly 40% compared to those in the randomly assigned control group.

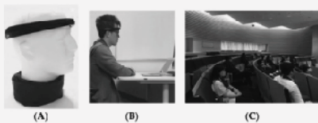


Figure 1. (A) Generic view of two main components used in the FocusWorld system: an electroencephalography (EEG) headset (Focus 1, BrainCo) and a blue cotton scarf, which contains two vibromotors used to provide a haptic feedback. (B) A person wearing the FocusWorld EEG system during Study 1. (C) Twelve participants wearing 12 units of the FocusWorld system during Study 2.

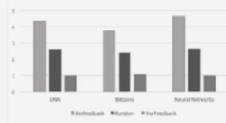


Figure 5. Average users' response on their perceived engagement across different types of lectures (1st-12th). Users reported being more engaged when feedback was provided to them compared to random or no feedback.

Participants who received biofeedback were significantly more engaged ($M = 21.72$, $SD = 4.51$, $SE = 1.38$) than participants who received random feedback ($M = 18.32$, $SD = 4.65$, $SE = 1.59$) or no feedback ($M = 20.37$, $SD = 2.69$, $SE = 0.698$). Figure 6 shows the average engagement scores computed from EEG data across three lectures combined for different feedback conditions. This finding does not reject the hypothesis 1, whereby haptic feedback stimulation triggered by drops in EEG-monitored engagement levels increased users' engagement.

Focus

Concentration Enhancement online Classroom

The Focus Concentration Enhancement Online Classroom is a brain-science-based intelligent classroom solution customized for educational institutions or schools. It enables the rapid creation of a concentration training system based on brain-computer interface AI technology for these institutions or schools. This training system encompasses hardware, software, and teaching materials.

The software consists of a teacher-side and a student-side interface. The teacher-side allows instructors to manage students, administer courses, view students' real-time and post-class reports, as well as receive teaching feedback—promoting tailored instruction. Meanwhile, students can gain in-depth understanding of their concentration levels through assessments and improve their concentration through classroom training.



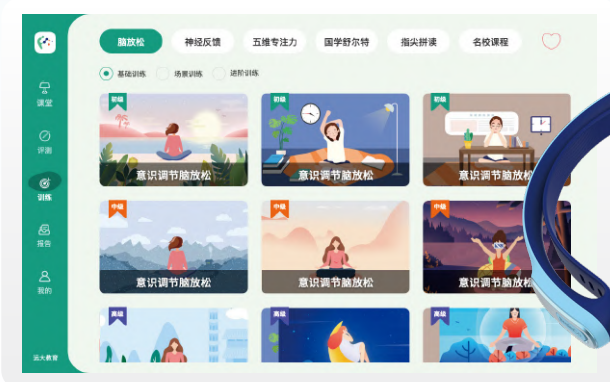
The
Teacher-Side
Interface



The
Student-Side
Interface



Feedback
Reports

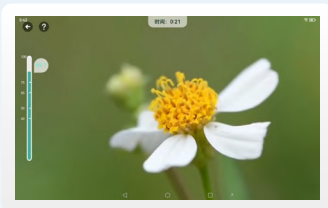


CogniXin

Cognitive Rehabilitation Training System

The CogniXin Cognitive Rehabilitation Training System is designed for middle-aged and elderly individuals with cognitive impairments. By integrating cognitive training with BCI-based neurofeedback training, it delivers personalized cognitive interventions through portable EEG devices and a backend management system. The system's algorithms dynamically generate personalized training content based on users' real-time EEG data and training performance. This approach can prevent cognitive decline, addressing issues such as decreased attention, reduced memory, diminished judgment, difficulties with daily living skills, and language expression difficulties.





Attention

Maintain focus on specific objects;
process and filter information;
resist irrelevant, external distractions.



Calculation

Handle numerical information in
daily tasks;
improve calculation accuracy.



Memory

Ability to store and retrieve information;
enhance short-term and long-term
memory; support daily life skills.



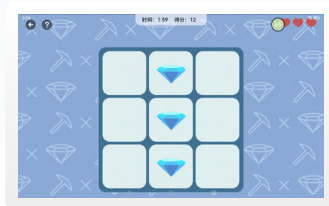
Language

Facilitate fluent language expression;
enhance social cognition.



Problem Solving

Enhance reasoning, logical
thinking, and complex
problem-solving abilities.



Visual Perception

Improve spatial orientation and
shape recognition;
strengthen object identification;
support daily activities.

Zentopia

A Smart System for Meditation and Sleep

Zentopia is a cutting-edge meditation and sleep system, scientifically grounded in neuroscience and psychology, that seamlessly integrates smart wearable technology with a comprehensive range of meditation courses and services.



World's leading Brain-Computer Interface Technology

- High-precision wearables
- Millisecond-level EEG detection
- Real-time multi-dimensional physiological data analysis
- Combined with AI algorithms to accurately quantify mindfulness states during practice

NeuroMindfulness™

- Train with real-time neural feedback through adaptive sound modulation
- Timely adjustment of mindfulness states
- Greatly improve the efficiency of practice



Multi-dimensional Analysis

- Multi-dimensional interpretation of mindfulness states
- Accurately reflect the physical and mental transformations induced by meditation
- Access to a wide range of high-quality mindfulness courses and music
Provide personalized guidance



Easleep

Brain-Computer Interface Sleep Device

The Easleep Brain-Computer Interface Sleep Device integrates brain-computer interface (BCI) technology with sleep scenarios, pioneering the CL-CES (Closed-loop CES)*. It utilizes precise electroencephalogram (EEG) monitoring, combined with artificial intelligence algorithms, to decode neural signals during different sleep stages. This intelligent device seamlessly combines EEG data detection with light, sound, and electrical interventions to enhance sleep quality for users.

·Luxury Edition

(3D wraparound eye mask style)

Effectively blocks light exposure, isolates external disturbances, and creates a deeply immersive sleep environment.



·Comfort Edition

(Lightweight, seamless fit without the need for an eye mask)

Can be used during work hours to help regulate the brain's stress and fatigue levels, facilitating activities such as bedtime reading and foot soaking for better sleep-related experiences.

*Note: CL-CES, pioneered by BrainCo, stands for Closed-loop Cranial Electrical Stimulation. Unlike traditional transcranial electrical stimulation therapies that rely solely on passive intervention, CL-CES leverages advanced brain-computer interface technology to deliver precise sleep monitoring. It provides targeted light, sound, and microcurrent stimulation based on different brain states, integrating these interventions with a comprehensive digital sleep management system to offer an all-in-one sleep solution

· Precise · Portable · Light

Wearable smart device and digitized sleep solution



Neurofeedback through Brainwave Collection

Real-time brainwave feedback + intelligent algorithm analysis
Scientific assessment of neural activity



B-CBTi Sleep Coaching Program

A non-pharmacological intervention for insomnia
One-on-one analysis by a sleep coach



Sleep Analysis Report

Daily/weekly Multidimensional Sleep Analysis
Improvements Clearly Visualized



Smart App

Four Smart Sleep Modes
+ Personalized Music Playlists
Cumulative Insight Reports
Digitized Sleep Management



Customized Sleep Therapy

CES Physical Sleep Aid + Binaural Beats
with Multi-Layered-Sound Waves
Adjustable Intensity Levels, On-Demand Music Switching



Brain-Computer Technology Innovation Lab

The Brain-Computer Technology Innovation Lab leverages key technological advancements in the brain-computer interface field and integrates innovations across various AI domains to establish a comprehensive “industry—academia—research—competition” talent cultivation model. It supports the development of brain science and AI training centers in universities and vocational colleges, fostering multidisciplinary growth and the deep integration of industry and education.



Schematic diagram of the
Brain-Computer Technology Innovation Lab

Three Directions Empowering the Development of “New Quality Productive Forces”

■ For Universities and Research Institutions

Fostering interdisciplinary collaboration and talent development to advance neuroscience and AI disciplines

■ For Primary and Secondary Education

A three-pillar, core-plus-two-wings framework that elevates students' scientific literacy

■ For Campus Mental Health

Digitally empowered mind-brain integration forging a new paradigm of holistic physical and mental well-being for students





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