Technology Transfer Brief

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A State-Aligned Neuromodulation Platform for Personalized and Reproducible Brain Stimulation

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Content

01 tES Is a Personalization Problem, Not an Efficacy Problem

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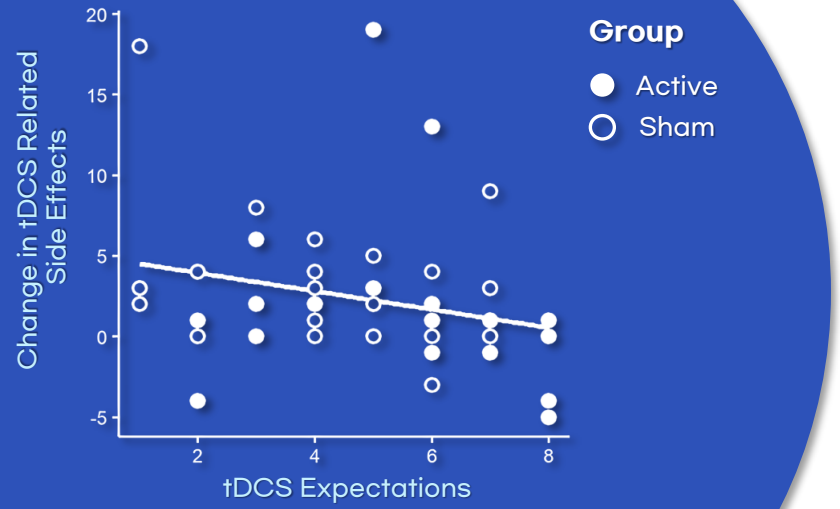
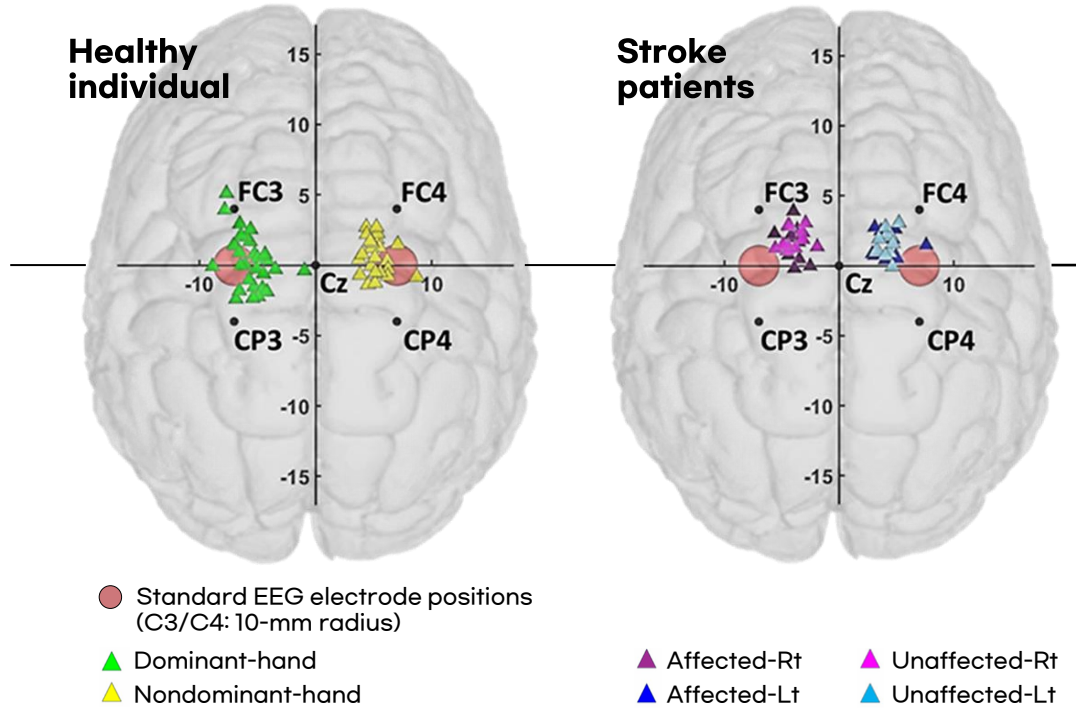
Clinical Variability in tES Outcomes



- Clinical outcomes are highly variable and indistinguishable from sham.
- This suggests mis-targeted stimulation, not lack of efficacy.

✓ **VALUE :** tES is a highly promising, non-invasive neuromodulation technique with broad clinical and therapeutic potential.

✓ **PROBLEM :** Current practice produces unstable and inconsistent clinical outcomes.



Clinical Outcome Instability in tES

① Improved targeting precision
(Functionally defined, individual-specific stimulation sites)

② Protocol standardization
(Standardized procedures for hotspot identification, stimulation setup, and session control)

*** Transcranial electrical stimulation (tES) :**
a non-invasive brain stimulation technique using weak electrical currents (tDCS, tACS, tRNS) to modulate neural activity.

- TMS-MEP-defined **motor hotspots** do not align with standard C3/C4 locations (>3-4 cm deviation).
- Insufficiently targeted stimulation leads to **clinically unstable** and **inconsistent outcomes**, especially in patient populations.

02 Technology Overview

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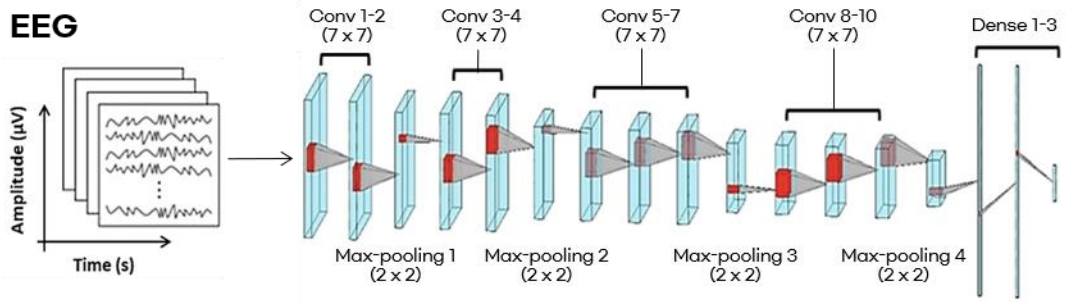
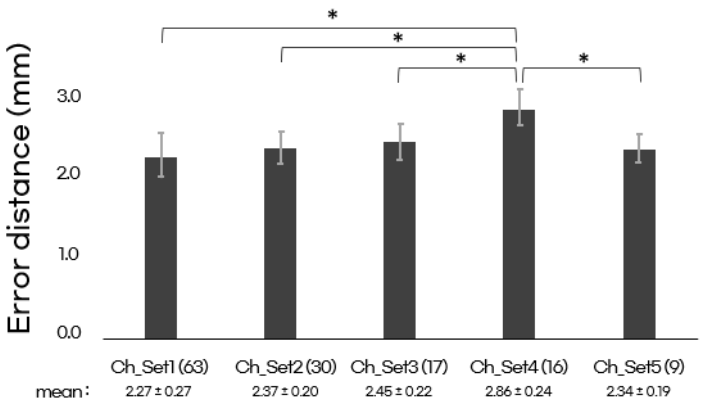
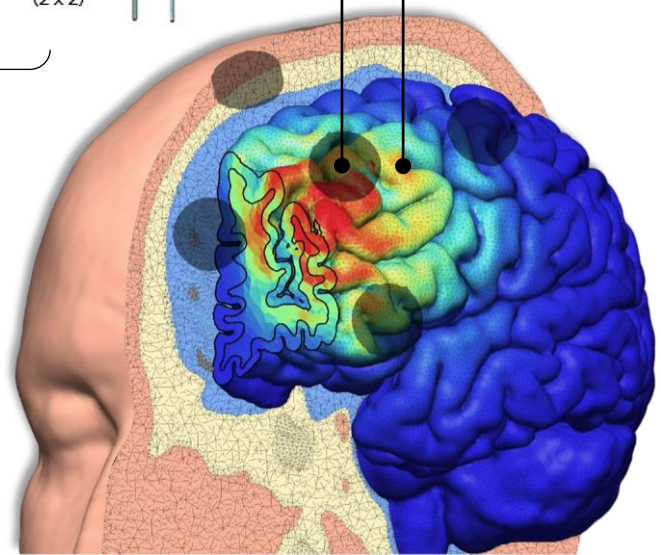
Motor Hotspot

- **Functional targeting** : EEG-based CNN identifies individual-specific motor hotspots beyond fixed anatomical locations.
- **Localization reliability** : Millimeter-level accuracy is maintained across different EEG channel configurations.

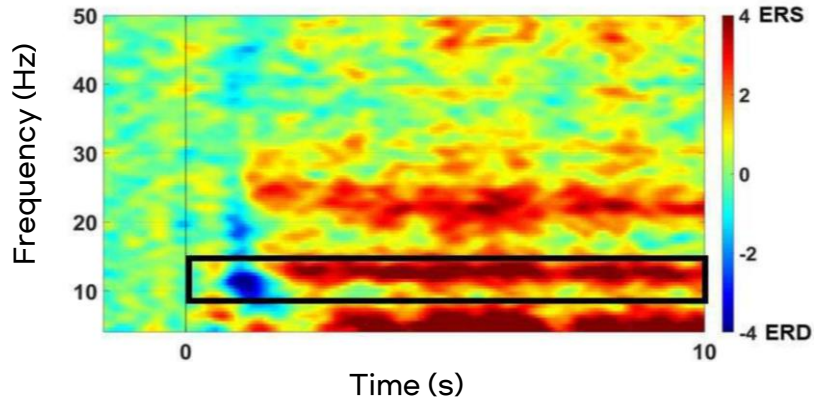






- ✓ **Functional motor hotspots are consistently identified across EEG configurations.**
- ✓ **EEG-derived neurophysiological features further define individualized stimulation intensity and temporal profiles.**

Personalized dosing



- EEG time-frequency analysis identifies individualized stimulation conditions.
- Personalized parameters modulate the timing and intensity of stimulation at the functional target.

03 Key Features & Advantages

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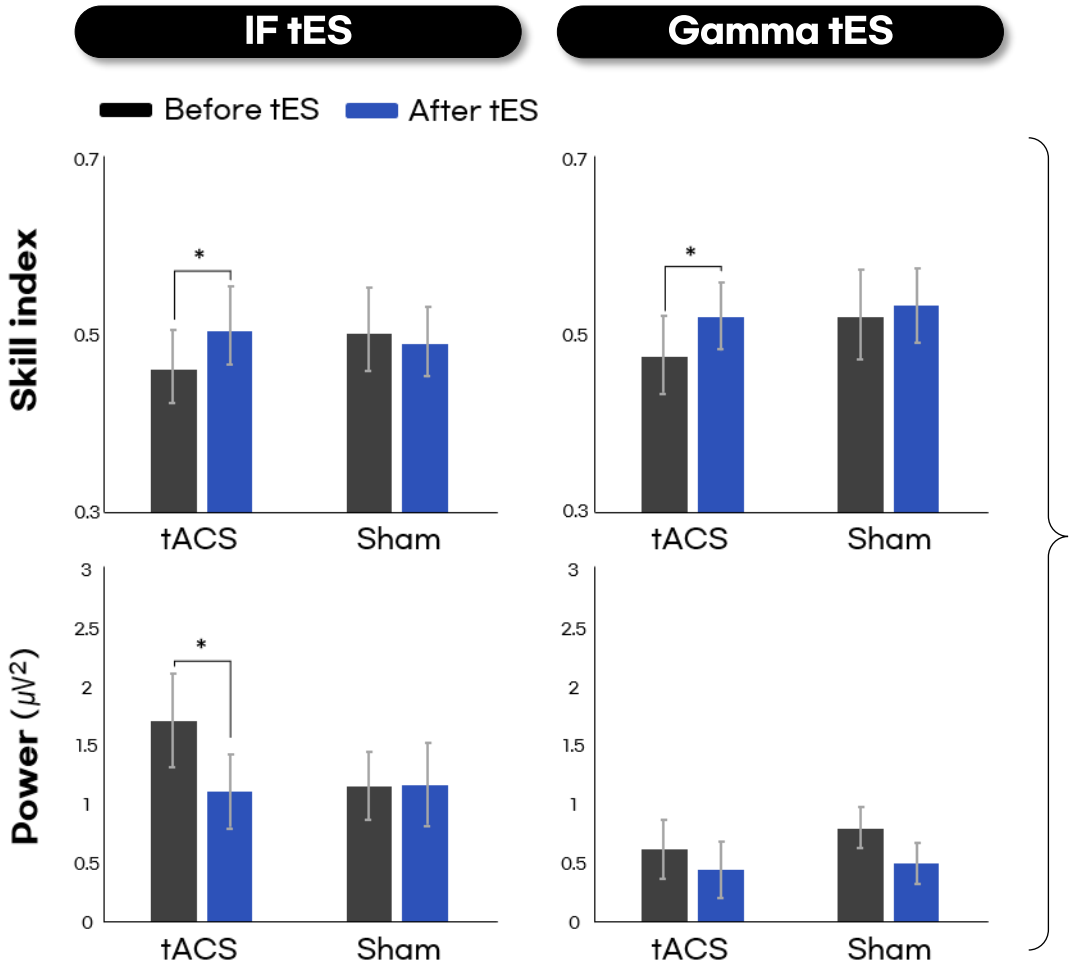
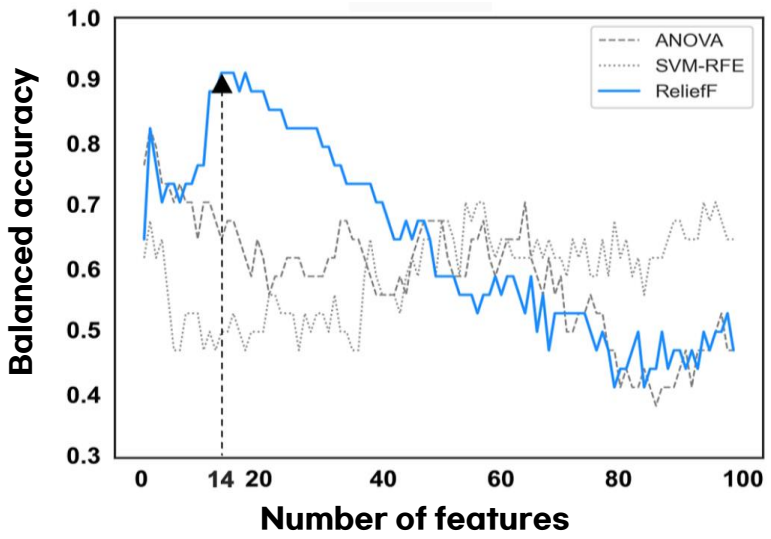
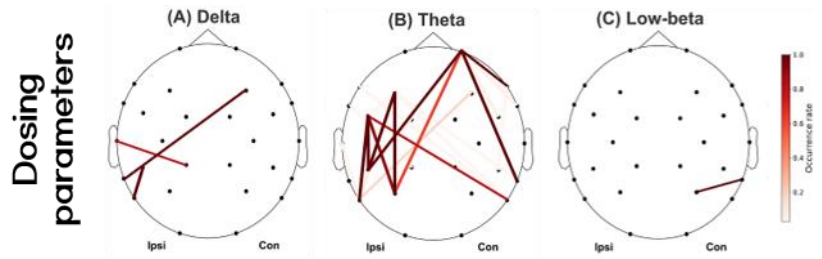
- ✓ **IF stimulation enables state-aligned, network-level neuromodulation, which determines tES performance.**
- ✓ **EEG connectivity features provide a physiological basis for individualized stimulation dosing.**







Selected EEG connectivity features are translated into individualized dosing parameters. (Timing, Intensity, Frequency, Session structure)

① Feature

- State-aligned
- Network-level control

EEG-driven, state-aligned network-level neuromodulation.

② Advantage

- Improved stability
- Improved reproducibility

Stable and reproducible tES performance through individualized control.

04 Strategic Business Opportunities

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- ✓ **Business Vision :** A new paradigm for **personalized neuromodulation**, unlocking scalable and reproducible brain stimulation solutions.
- ✓ **Engagement Model :** Open to **technology licensing**, **collaborative R&D** partnerships, and potential **joint venture** formation.

Collaborative development opportunities

❶ Personalized Neuromodulation Platform

- **Scope :** Joint development of a platform for continuous EEG analysis and personalized stimulation control.
- **Value :** Transforms a tES device into a recurring, data-driven service.

❷ Regulatory & Clinical Evidence Generation

- **Scope :** Joint clinical and regulatory studies to validate personalized tES algorithms.
- **Value :** Accelerates approval and reduces regulatory uncertainty.

❸ EEG-based Diagnostic & Functional Assessment Solutions

- **Scope :** Co-development of EEG-based analysis tools for disease and motor function assessment.
- **Value :** Extends the business from stimulation to diagnosis and monitoring.

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Collaborative R&D → Platform services

* Korean Government-Funded Programs

IP license (Option/Exclusive) → Device supply

Industry partners

- Neuromodulation device companies
- Digital therapeutics & neuro-health solution providers
- Data & AI-driven Healthcare Platform Companies

End users

- Clinicians and therapists
- Patients requiring neuromodulation therapy (stroke, movement disorder, nervous system disease)
- Healthy users for performance or wellness applications

Intellectual Property

- Title : APPARATUS AND METHOD FOR DETECTING MOTOR HOTSPOT POSITION BY USING BRAINWAVE, AND TRANSCRANIAL ELECTRICAL STIMULATION APPARATUS USING SAME
- Patent : US 18/014007,US 08/728903 PCT/KR2023/011719, KR 10-2670799, KR 10-2513099

CONTACT US

For inquiries regarding technology licensing, collaborative R&D, or partnership opportunities, please contact :

- Technology Transfer Agency : **IBU Inc.**
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Partnering to unlock new business opportunities through innovation.

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