

How Applied Neuroscience, Inc. Has Changed the Face of EEG Biofeedback

- 1994 – First to Introduce and Implement a Normative Database for assessment prior to EEG Biofeedback (Lexicor). The goal was to use Z Scores from Norms for Assessment, Biofeedback Protocol Development & Evaluation of Treatment efficacy following Biofeedback.
- 2000 - First to publish how to compute LORETA Z scores in real-time for Neurofeedback
- 2002 – First to Produce Commercial Software that Integrates Conventional EEG with QEEG on the Same Screen at the Same Time.
- 2003 - First to LORETA Z scores for Assessment and evaluation of clinical efficacy following Biofeedback
- 2004 – First to Invent and Implement a Real-Time DLL (Dynamic Link Library) of Z Scores (Live Z Scores) for EEG Neurofeedback that was later distributed to six major Neurofeedback companies.
- 2005 – First to Implement LORETA Source Correlations.
- 2008 – First to Implement 19 Channel Z Score Neurofeedback including a 19 channel Z Score DLL.

First to Implement Surface EEG Phase Shift & Phase Lock measures for Research and for Neurofeedback.

First to Implement Cross-Frequency Phase Lock & Phase Shift Duration.
- 2009 – First to Implement Seamless Integration of QEEG Assessment and Neurofeedback in the same software platform

First to Implement Surface Laplacian EEG Neurofeedback.

First to Implement Average Reference EEG Neurofeedback.

First to Implement a Symptom Check List to produce Neurofeedback protocols of the Surface EEG.
- 2011 – First to Implement LORETA Z Score Neurofeedback.

First to Implement a Symptom Check List with LORETA Z score Neurofeedback.
- 2012 – First to Implement LORETA Coherence and Phase Difference in Neurofeedback.

First to Produce the “Handbook of QEEG and EEG Biofeedback” a Textbook for Students and Professionals.
- 2013 – First to Implement LORETA Z Scores of Phase Lock & Phase Shift to Neurofeedback.

First to Implement Real-Time Nodes (Brodmann Areas) and Connections (Coherence/Phase) between Nodes for Assessment and Neurofeedback (BrainSurfer).

First to Implement Real-Time Phase Shift and Phase Lock Duration Between Nodes (Brodmann Areas) for Assessment and Neurofeedback (BrainSurfer).
- 2014 – First to Implement LORETA Phase Shift and Phase Lock Duration Z Scores for Assessment with Color Coded Contour Maps

First to Implement an Automatic Clinical Report Writer that is Generated Locally to Empower Individual Clinicians Removing the need for External QEEG Report Services

First to integrate a 19 channel Dry electrode headset with EEG Neurofeedback

2015 – First to Implement NeuroLink to allow patients/clients to assess symptom severity and seamlessly select a protocol to reinforce stability in dysregulated brain networks linked to the symptoms

First to implement a Neural Network Injury Index of patients/clients following a concussion and TBI

First to integrate a Chinese amplifier (Fistar SNS) for real-time EEG Z score Biofeedback

First to implement Effective Connectivity or measures of information flow between all combinations of 19 EEG channels using the Phase Slope Index (PSI) for assessment

First to implement Effective Connectivity or measures of information flow between all combinations of 88 Brodmann Areas using LORETA with the Phase Slope Index (PSI) for assessment

More Innovations in Preparation... (swLORETA, Effective Connectivity of 1 to 19 channel scalp surface Neurofeedback, Effective Connectivity of LORETA Neurofeedback, NeuroLink expansions, ACR updates, Phase/Amplitude Cross-Frequency add ons, more visual and auditory feedback methods, etc.)