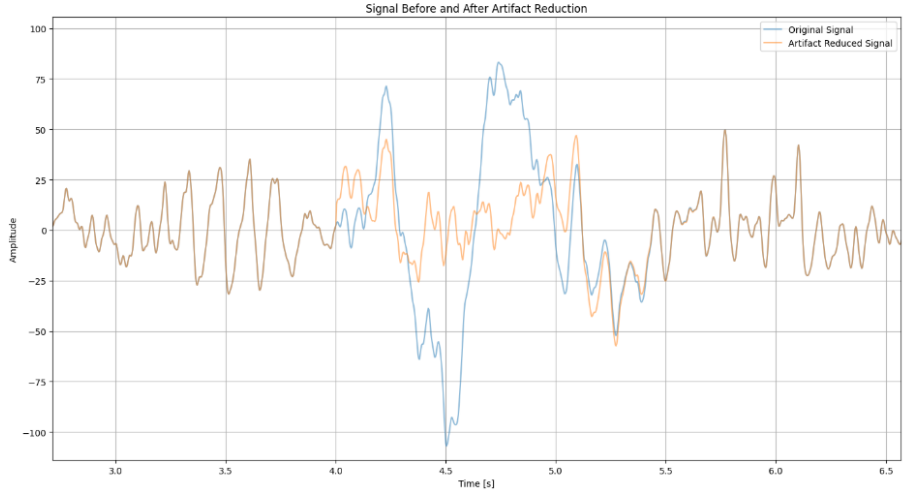
Sensor Artifact and Noise Reduction Algorithm (SANoRA)

Intelligent Signal Processing

The Sensor Artifact and Noise Reduction Algorithm (SANoRA) is an intelligent signal processing engine that transforms noisy, motion-contaminated EEG and ECG into clean, interpretable data in operational environments. SANoRA combines multimodal auxiliary sensing (contact impedance, pressure, accelerometry, and interleaved electrodes) with advanced artifact removal algorithms—including gated wavelet filtering—to automatically detect and remove motion, EMG, and eye-blink artifacts in real time. This capability enables high-fidelity brain and physiological monitoring for the warfighter during training, flight, and other mission-critical conditions.

SANoRA in Use



SANoRA Benefits

- **Artifact-free operational EEG** – Converts in-flight or mobile EEG into reliable, mission-usable data.
- **Improved physiological classification** – Boosts cognitive and physiological state detection accuracy, with up to 5x ERP SNR improvement and 14% higher cognitive classification accuracy.
- **Real-time integration** – Works seamlessly with QUASAR systems such as DEFIES and Q-Band for onboard processing.
- **Force multiplier for research and training** – Enables robust EEG-based metrics in high-motion, real-world conditions.

Your Applications

SANoRA was developed under Army SBIR funding and validated in operationally relevant environments. Applications include:

- Embedded in EEG systems (e.g., DEFIES) for real-time artifact suppression
- Human performance research under mobile and high-motion conditions
- Cognitive workload monitoring in training and operational scenarios

Quasarusa.com **info@quasarusa.com**