



QUANTUMEZON GLOBAL PVT. LTD.

 CIN: U72100MH2026PTC472079

 Regd. Office.: Girnar Apt. # 402, S.V.Road, Malad (W), Mumbai 400064

 (M) 9702928315 |  eMail: interact@quantumezon.com

TECHNICAL TEAM & PRODUCT DEVELOPMENT DOCUMENT

Entity Name: Quantumezon Global Pvt Ltd.

Date of Incorporation: 31/5/26



1. Core Innovation & Technology Brief

The Problem Statement:

- Brain–Computer Interface (BCI) technologies remain limited by low real-time intelligence, poor interoperability between multimodal biosensors, high computational latency, fragmented AI architectures, and inadequate cybersecurity for sensitive neurophysiological data. Existing systems are often application-specific, cloud-dependent, and lack scalable hybrid AI capabilities for next-generation healthcare, assistive technologies, education, robotics, and industrial automation. Quantumezon aims to address these challenges through a secure, edge-intelligent, and future-ready Hybrid AI–Quantum BCI platform.

Proposed Technical Solution:

- Quantumezon is developing a proprietary Hybrid AI–Quantum Brain–Computer Interface (Quantumezon-BCI) framework that integrates multimodal neuro-sensing, embedded edge intelligence, advanced artificial intelligence, quantum-inspired optimisation, and secure cloud intelligence into a unified cognitive computing platform.
- The platform captures signals from EEG and multiple physiological sensors, performs real-time signal processing on embedded Edge-AI hardware, executes intelligent inference using deep learning and hybrid AI models, and securely synchronises with a cloud-based cognitive intelligence platform for continuous learning, digital twins, federated AI, and advanced analytics. The architecture is designed to be interoperable with future quantum computing infrastructure while remaining deployable on current embedded systems.

Uniqueness & IP Element:

- The proposed technology introduces a proprietary Hybrid AI–Quantum Embedded Computing Architecture that combines multimodal neuro-sensing, TinyML-enabled edge intelligence, quantum-inspired optimisation, privacy-preserving AI, and post-quantum cybersecurity within a single modular platform. Unlike conventional BCI systems that rely primarily on cloud processing or standalone AI models, Quantumezon-BCI enables low-latency edge inference, secure federated learning, scalable cognitive intelligence, and future quantum interoperability. The innovation is intended to generate proprietary intellectual property across system architecture, embedded software, AI algorithms, secure communication protocols, and cognitive application frameworks

2. Technology Stack (Q-BCI Infrastructure Framework)

1. Frontend Development

React.js / Next.js (Web Dashboard)

Flutter (Cross-platform Mobile Apps)

HTML5, CSS3, TypeScript

WebGL / Three.js for Cognitive Visualisation

2. Backend Framework

Python (FastAPI)

Node.js (Microservices)

REST APIs & GraphQL

gRPC for high-speed communication

3. Cloud Infrastructure & Database

Microsoft Azure / AWS / Google Cloud

Docker & Kubernetes

PostgreSQL

MongoDB

Redis Cache

Object Storage

Data Lake for AI datasets

4. Embedded Edge-AI Computing

ARM Cortex-based SoC

NVIDIA Jetson / Qualcomm AI Edge Platforms

TinyML

TensorFlow Lite

ONNX Runtime

Edge Impulse

Embedded Linux / RTOS

5. AI & Machine Learning Stack

Python

TensorFlow

PyTorch

Scikit-learn

XGBoost

Hugging Face Transformers

CNN

RNN

LSTM

Transformer Networks

Graph Neural Networks (GNN)

6. Quantum & Hybrid Computing

Qiskit

PennyLane

Quantum-Inspired Optimisation

Hybrid AI–Quantum Algorithms

NISQ-ready Architecture

Future Quantum Hardware Interoperability

7. Neuro-Signal Processing

Digital Signal Processing (DSP)

FFT

Wavelet Transform

Adaptive Filtering

ICA / PCA

Feature Engineering

Real-time Artifact Removal

8. Sensor Integration Framework

EEG

EMG

ECG

EOG

PPG

IMU

Eye Tracking

Voice & Speech Analysis

Environmental Sensors

Sensor Fusion Engine

9. Security & Privacy

End-to-End Encryption

Zero Trust Security

Trusted Execution Environment (TEE)

Secure Boot

Hardware Security Module (HSM)

Federated Learning

Privacy-Preserving Machine Learning

Post-Quantum Cryptography

Identity & Access Management (IAM)

10. Communication & Connectivity

Bluetooth Low Energy (BLE)

Wi-Fi 6/6E

5G

MQTT

WebSocket

HTTPS/TLS

Secure Device Management

11. DevOps & MLOps

GitHub

GitHub Actions

Docker

Kubernetes

MLflow

CI/CD Pipeline

Model Versioning

Automated Deployment

Monitoring & Logging

12. Cognitive Cloud Platform

AI Model Training

Knowledge Graph

Digital Twin Framework

Decision Support Engine

Federated AI Server

Long-Term Analytics

Explainable AI (XAI)

13. Hardware Platform

Multi-Core CPU

GPU

DSP

Neural Processing Unit (NPU)

FPGA Fabric

Security Module

Memory Controller

Sensor Interface Hub

Wireless Connectivity Module

Power Management Unit

Technology Innovation Summary:

QuantumEZON-BCI is a proprietary Hybrid AI-Quantum Neurotechnology Platform combining multimodal brain sensing, embedded edge intelligence, deep learning, quantum-inspired optimisation, secure cognitive cloud infrastructure, and post-quantum cybersecurity. Its modular architecture enables real-time, privacy-preserving neurocomputing for healthcare, assistive technology, education, robotics, industrial automation, defence, and scientific research while remaining compatible with future quantum computing ecosystems. This integrated architecture forms the core proprietary technology and intellectual property foundation of the product.

3. Technical Team Structure & Profiles

The following technical personnel drive the design, development, and scaling of our proprietary technology:

Profile 1: Technical Engineer

- **Full Name:** Dr. Swayam Sodha
- **Designation:** Quantum Code Architect
- **Qualifications:** IIT (Guwahati) Advanced Certification in 'Applied Data Science, ML & IoT', Hon. Doctorate in Info-Tech, Diploma in Data Science, 5 years experience in Python programming
- **Role in Startup:** Responsible for developing quantum code library towards quantum product innovation (Q-BCI), build infrastructure design, product development roadmap, and data security management.
- **LinkedIn Profile:**
<https://www.linkedin.com/in/dr-swayam-sodha-itsightclubswayam-b710b4248/>
(ITSightClubSwayam)

Profile 2: Technical Advisor cum Mentor

- **Full Name:** Jayesh V. Sodha
 - **Designation:** CEO Technology Advisor & Growth Mentor
 - **Background:** 30+ years entrepreneurship experience, B.Com., Diploma in Computers Application, Diploma in Personnel Management and Industrial Relations, Oracle D2K certification and many more.
-

4. Current Product Development Stage

- **Ideation / Prototype Stage:** We have finalized wireframes, flowcharts, and technical architecture drafts. The Prototype designed with technical features and positioning is available for presentation. A glimpse of same is provided in video Pitch Deck presentation.
- Active Website Link: <https://quantumazon.com>

5. Self-Declaration & Authorized Signatory

We hereby certify that the technical details and structural team allocations listed above are true and accurate representations of our company footprint

For Quantumazon Global Pvt. Ltd.

Jayesh V. Sodha
Director

