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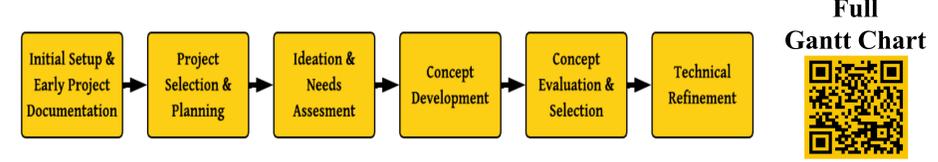


Introduction

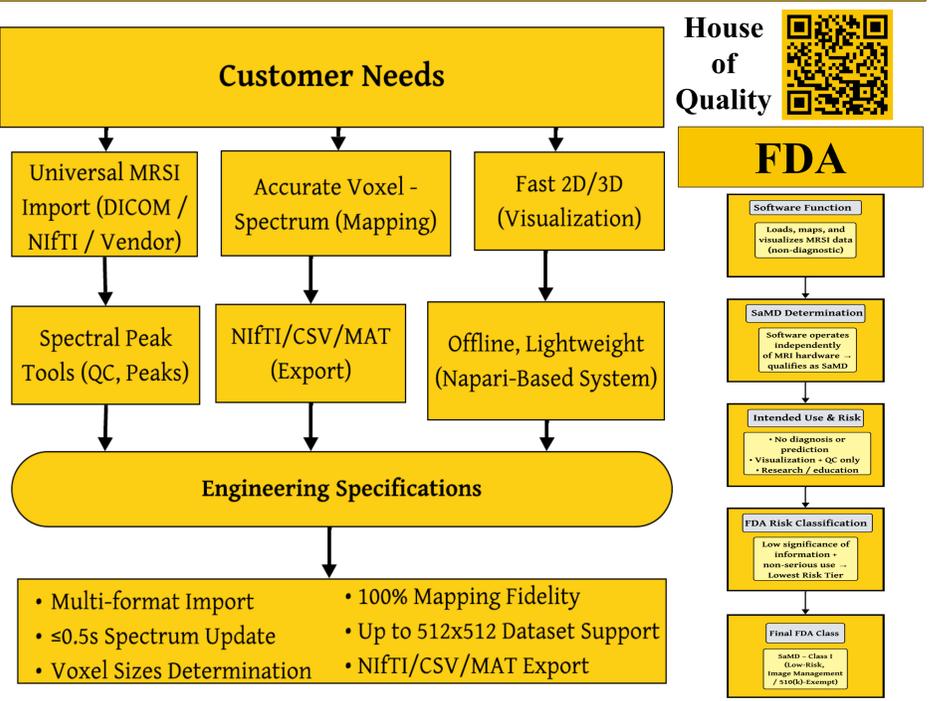
Magnetic Resonance Spectroscopic Imaging (MRSI) provides metabolic information that goes beyond traditional MRI by measuring voxel-level biochemical signatures in the brain. Although over 40 million MRI procedures are performed annually in the U.S., MRSI remains significantly underutilized because there is no standardized, reliable software that can ingest, visualize, and compare spectroscopy data across different scanner manufacturers and file formats. Existing workflows are fragmented, slow, and often require manual conversions or custom scripts, making them inaccessible to clinicians and students and difficult to integrate into research pipelines. Our project addresses this gap by developing M.A.P.S., a unified, user-friendly platform built in Napari (a modern and widely used software for medical data visualization) that streamlines MRSI data loading, quality control, spectral visualization, and basic analysis in one consistent environment.

Mission Statement

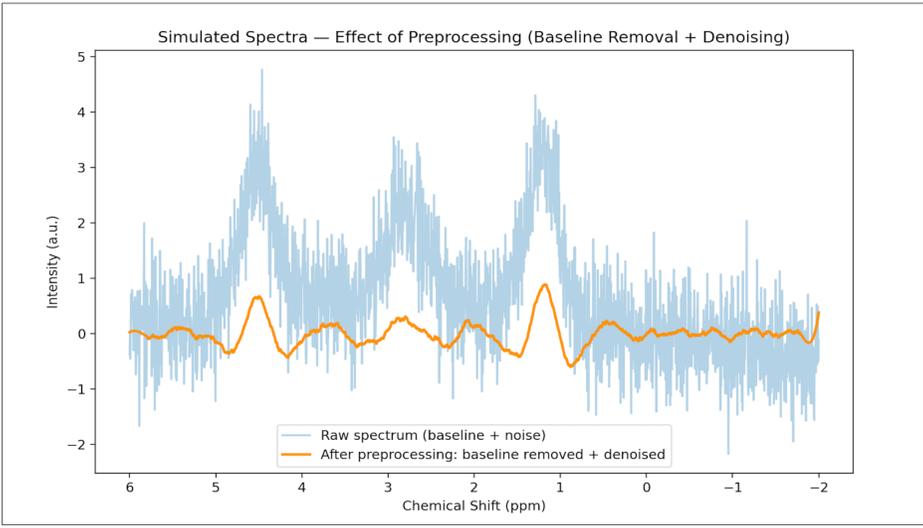
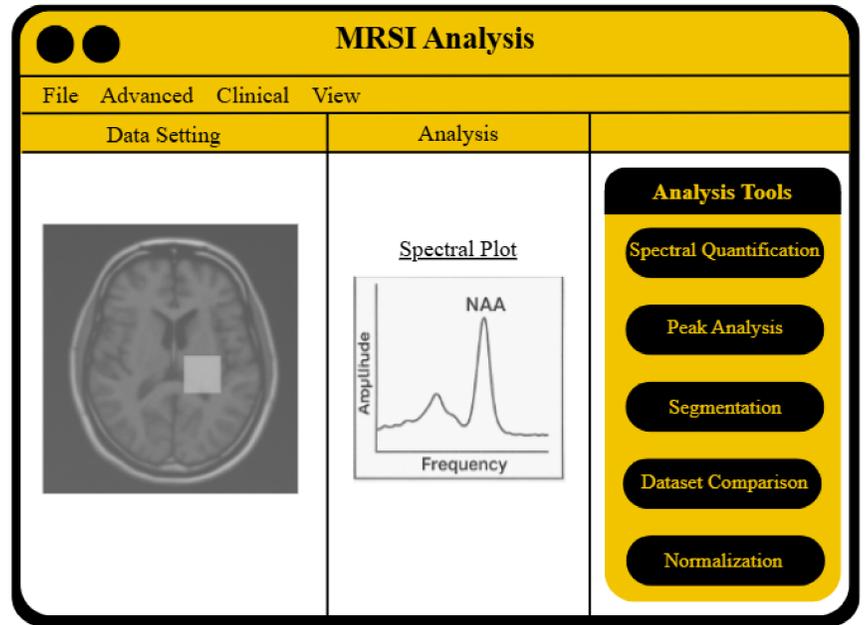
M.A.P.S. aims to provide a standardized, intuitive, and open-source platform for MRSI data that simplifies file import, visualization, and basic analysis across MRI systems, improving accessibility, consistency, and efficiency for clinicians, students, and researchers.



Design Inputs



Concept and Design

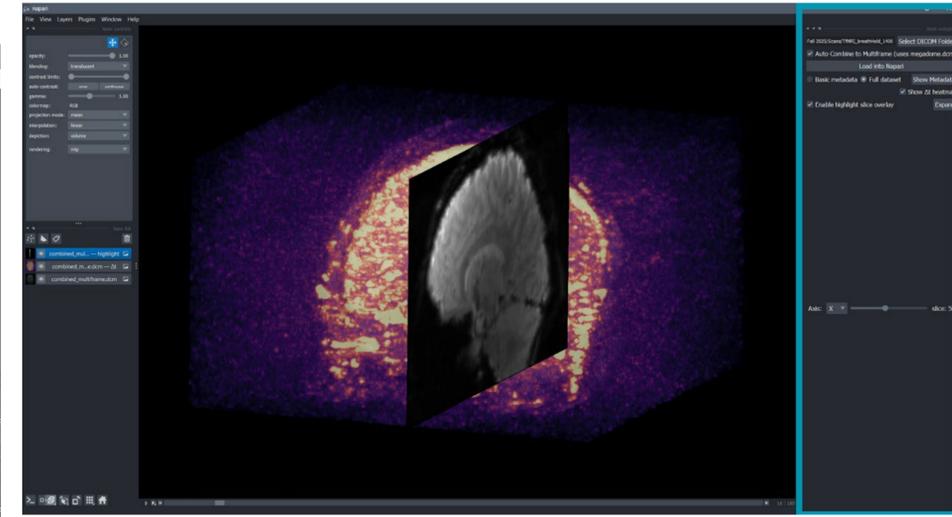


Manufacturing Design



Product Specifications and Architecture

- Key Features**
- Automatically linked anatomical + spectral views
 - Smooth single and group voxel navigation + inspection
 - 2D slices with early 3D visualization capability
- System Architecture**
- Modular stages for import, mapping, visualization, and many analysis options
 - Components operate independently for security and scalability + speed.



Design Status and Future Steps

M.A.P.S. now supports multi-format import, voxel-spectrum mapping, 2D/3D visualization, novel axis scan visualizations, and data export. Next steps include clinical iteration, cross-vendor validation, enhanced security, and long-term regulatory planning.



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