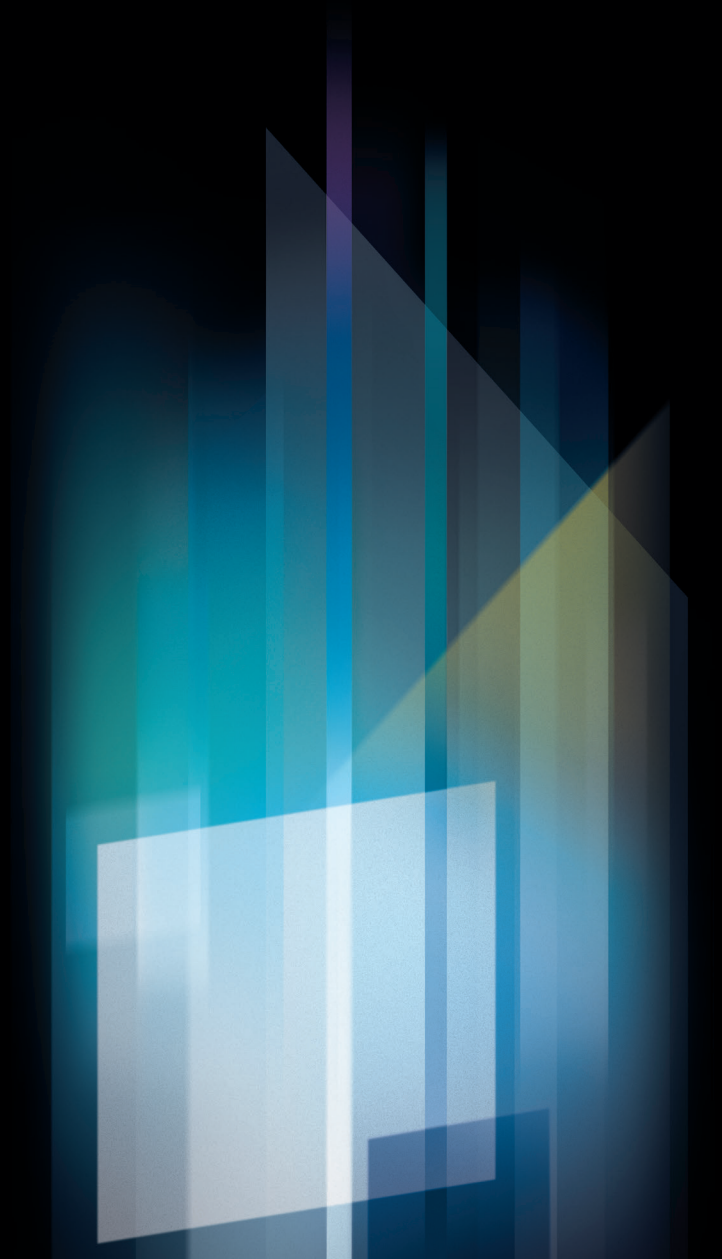
MIMneuro™

Increased Confidence



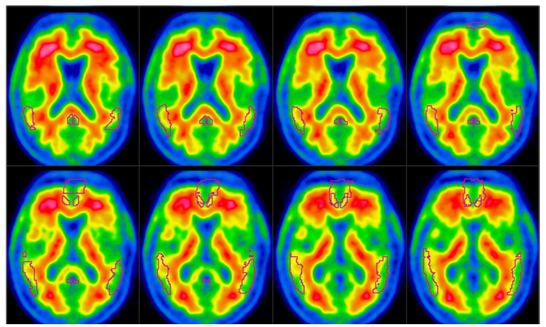
Increased Confidence with Quantitative Analysis

Quantitative analysis provides objective information to aid and complement visual interpretations. MIM Software, a GE HealthCare Company, addresses the need for quantitation in evaluating neurological disorders with MIMneuro™, an automated analysis solution for PET and SPECT brain scans.

MIMneuro brings together an array of quantitative analytical tools in an automated and easy-to-use package. The software is developed with careful attention to feedback from both radiologists and referring physicians. MIMneuro fits effortlessly into your reading workflow and raises the confidence of both the reader and the referring physician.

MIMneuro's tools provide support for multiple tracers including Vizamyl™, Amyvid®, NeuraCeq™, FDG, DaTscan™, and HMPAO. Statistically significant differences in tracer uptake are highlighted in color-coded overlays and in a data table of brain regions. Statistical results can also be fused with MR or CT for easier localization of abnormalities.

At the very core of any neuro quantitative analysis software is the registration method. MIMneuro's **BrainAlign**™ deformation algorithm provides accuracy by matching the size, shape, and orientation of a patient's brain scan to a database of normal controls for comparison.



Amyloid-PET image color scales are automatically adjusted per the tracer prescribing information. In this example, MIMneuro automatically applies a rainbow color scale to a Vizamyl image.

Quantification Methods

MIMneuro supports various quantification methods for tracers, including Centiloid, region-based analysis, and voxel-based analysis.

Centiloid*

Centiloid analysis is supported for the amyloid tracers Vizamyl, Amyvid, and Neuraceq. These tracers help visualize amyloid plaque density in patients being evaluated for Alzheimer's disease. MIMneuro calculates Centiloid, a standardized quantitative metric across tracers, to assist clinicians in measuring amyloid plaque. The software simplifies analysis by guiding clinicians through generating and understanding results.

Region-Based Analysis

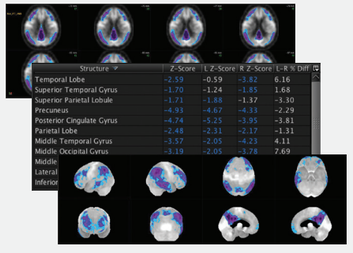
Region-based analysis uses integrated anatomical brain atlas regions to compare tracer uptake to a normals database using SUV Ratios (SUVR) or Z-scores. Appropriate regions, such as the posterior cingulate gyrus and precuneus, are included for all approved tracers.

*Centiloid functionality in MIMneuro may not be available in your region. Contact your MIM Software representative for more information.

Voxel-Based Analysis & Cortical Surface Projections

Voxel-based analysis, which compares tracer uptake between a patient and normal controls on a voxel-by-voxel basis, highlights areas of statistically significant differences with color-coded overlays. Cool colors indicate areas of decreased tracer uptake such as FDG hypometabolism. Warm colors indicate increased tracer accumulation in patients with amyloid plaques when using amyloid tracers.

Brain images can be also viewed as cortical surface projections (or stereotactic surface projections), allowing for quick localization of abnormalities and providing an easily understood view for your referring physicians.

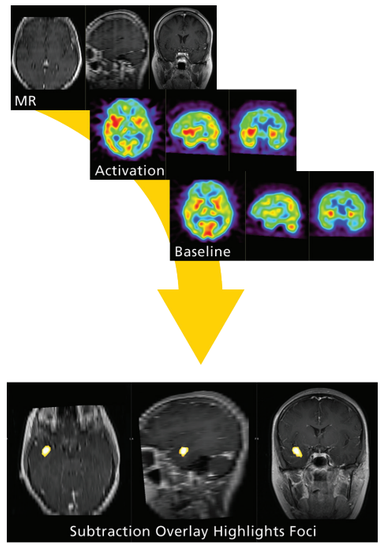


Example voxel-based analysis overlay (top), region-based analysis statistics (middle), and cortical surface projections (bottom) for an FDG exam.

Visualize the Difference

Automated subtraction workflows facilitate the processing of serial brain exams in evaluating treatment response or disease progression. Workflows also allow for comparing baseline and activation PET and SPECT exams and ultimately make the process faster and more consistent.

Image intensities are matched through auto-normalization so that normal areas will have similar intensities on both exams. The areas of difference are then highlighted through cluster analysis, which removes statistically insignificant, distracting differences. The resulting difference image can be fused to an MR or CT, which helps to localize the abnormality and provides a result that can be easily communicated to your neurology or neurosurgery colleagues.



Advanced Applications

For advanced research, MIM Software has incorporated sophisticated tools into MIMneuro, allowing researchers to take advantage of the same flexible and easy-to-use tools that are available to clinicians.

MIMneuro also provides the ability to create custom brain regions for analysis. Whether it is a new anatomical region or a combined region created by adding together several regions, custom brain regions can be saved for use in future quantitative analyses.

BrainAlign

Although often overlooked, quantitative neuroimaging software is only as good as its registration algorithm. Without a sound registration technique to ensure anatomical correspondence across multiple patients, you cannot be certain that any regional or voxel-level comparison is truly comparable.

BrainAlign is MIMneuro's landmark-based deformation algorithmn which meticulously registers each brain to a standard template, allowing for increased accuracy in quantitative comparisons. Some algorithms seek to match intensity values, which minimizes real differences and leaves registered brains looking unrecognizable. Alternatively, affine registration alone is insufficient to accurately account for local shape differences in patient brains. In contrast, with more than 700 landmarks identified throughout the brain, BrainAlign has sufficient degrees of freedom to correct for local differences without changing the relative distribution of tracer uptake.

Brain align supports multiple template registration, which allows for accurate registation of highly specific tracers such as Amyvid. Unique to MIM, this method performs simultaneous registration to multiple templates, removing the bias present with single template or one-at-a-time template registrations.

Integrated Anatomical Atlases

One of the most powerful features of MIMneuro is its integration of various anatomical atlases. These atlases provide a solid basis for regional statistical comparisons, SUVR calculations, and normalization for voxel-based and cortical analyses. These include a single-brain atlas, probabilistic atlas for perfusion tracers, as well as atlases generated specifically for amyloid and DaTscan analysis.

MIMneuro's single-brain atlas is an anatomically complete atlas developed as a coordinated effort between several radiologists and a neuroanatomist. The probabilistic atlas for perfusion tracers is built from 10 individuals, allowing for increased anatomical sensitivity and specificity when performing region-based analysis. Finally, tracer specific atlases are derived from probabilistic atlases or provided by outside sources, such as radiopharmaceutical companies.

To learn more, call **866-421-2536** or visit **mimsoftware.com/contact** to schedule a presentation of MIM.

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