HIPS stands for Hippocampus Subfield Segmentation, and it is a fully automated tool developed as part of the volBrain platform. Its primary function is to segment the hippocampus into subfields using high-resolution 3D T1-weighted MRI.

 Purpose To provide volumetric measurements of hippocampal subregions, which are critical in the study of:

Alzheimer's disease

Epilepsy

Schizophrenia

Cognitive decline

And other disorders involving hippocampal atrophy or remodeling

 What It Segments HIPS divides the hippocampus into anatomically meaningful subfields:

CA1, CA2–CA3

Dentate gyrus

Subiculum

SR-SL-SM (Stratum Radiatum / Lacunosum / Moleculare)

Presubiculum

Hippocampal tail

These measurements are produced separately for each hemisphere.

⚙ Technical Details Input: 3D T1-weighted MRI

Output: Segmented images + volumetric report

Based on machine learning models trained on manual segmentations

Uses non-linear registration and anatomical priors

Part of volBrain's backend, can be integrated with other tools like Vol2Brain

⚠ Limitations Only reliable with high-quality, non-lesioned MRI scans

Not validated for use in brains with:

Mass lesions (e.g., tumors, AVMs)

Postoperative changes

Severe atrophy or malformations

Focused only on the hippocampus, so not useful for whole-brain analysis

⚠ In the AVM Study Context The use of HIPS in patients with AVMs near the sensorimotor cortex is questionable. Since AVMs can cause mass effect, edema, or distortion, especially in adjacent white matter tracts, hippocampal subfield measurements may be indirectly affected or unreliable. Without showing clinical correlation (e.g., memory testing), these volumetric differences risk being overinterpreted.

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