The CASMIP laboratory conducts groundbreaking interdisciplinary research to develop innovative computer-based methods for assisting clinicians in the diagnosis, planning, execution, and evaluation of medical and surgical procedures. We follow a synergistic methodology, which consists of developing the basic building blocks for computer-aided radiology and surgery while simultaneously developing solutions for specific clinical applications. The CASMIP laboratory conducts basic and applied interdisciplinary research in close collaboration with leading hospitals, universities, and companies in Israel and abroad. It has an established record of industrial collaboration and technology transfer for 15 years.

The main clinical areas of research include Medical Imaging, Diagnostic and Interventional Radiology, Neurosurgery, and Orthopaedics. The technical areas include surgical navigation, medical robotics, multimodal registration, anatomy and pathology segmentation, medical image processing, patient-specific medical modeling, and medical content-based image retrieval.

Current projects include:

- Medical content-based image retrieval for radiological evaluation
- Segmentation of organs and pathologies from CT and MRI images
- Smart editing and 3D segmentation correction of volumetric scans
- Rigid and deformable registration of X-ray, CT, MRI, and fMRI images
- Brain, liver, lungs tumors delineation and follow-up
- Preoperative planning for minimally invasive neurosurgery
- Haptic preoperative planning for bone fractures surgery
- Quantitative patient-specific fracture fixation evaluation