The National Alliance for Medical Imaging Computing (NA-MIC)

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The National Alliance for Medical Imaging Computing (NA-MIC) is a multi-institutional, interdisciplinary team of computer scientists, software engineers, and medical investigators who develop computational tools for the analysis and visualization of medical image data. The purpose of the center is to provide the infrastructure and environment for the development of computational algorithms and open source technologies, and then oversee the training and dissemination of these tools to the medical research community. This world-class software and development environment serves as a foundation for accelerating the development and deployment of computational tools that are readily accessible to the medical research community. The team combines cutting-edge computer vision research (to create medical imaging analysis algorithms) with state of the art software engineering techniques (based on "extreme" programming techniques in a distributed, open-source environment) to enable computational examination of both basic neurosience and neurological disorders. In developing this infrastructure resource, the team will significantly expand upon proven open systems technology and platforms.

The driving biological projects will come initially from the study of schizophrenia, but the methods will be applicable to many other diseases. The computational tools and open systems technologies and platforms developed by NA-MIC will initially be used to study anatomical structures and connectivity patterns in the brain, derangements of which have long been thought to play a role in the etiology of schizophrenia. The overall analysis will occur at a range of scales, and will occur across a range of modalities including diffusion MRI, quantitative EGG, and metabolic and receptor PET, but potentially including microscopic, genomic, and other image data. It will apply to image data from individual patients,and to studies executed across large poplulations. The data will be taken from subjects across a wide range of time scales and ultimately apply to a broad range of diseases in a broad range of organs.