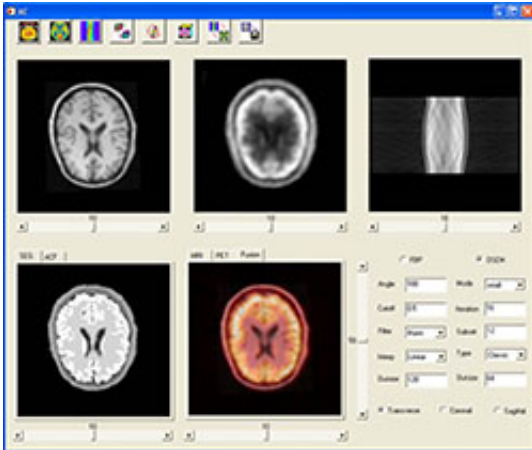


Perfecting the combined MR/PET

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PET (Positron Emission Tomography) is an imaging technique that provides insight into the metabolic and functional alterations related to pathologic process. CT (Computerized X-Ray Tomography) and MRI (Magnetic Resonance Imaging) reveal anatomical changes due to disease. Baowei Fei, PhD, EngD. associate professor in radiology has developed a software quantification system that combines MR/PET applications. Combining MR and PET is an emerging hybrid imaging technology.

On PET [images](#) alone, it is difficult to localize small lesions due to the lack of anatomic details, relatively low resolution, and partial volume effects. Tumor heterogeneity and vascularization also make interpretation of PET data difficult. Fortunately, MRI (Magnetic

Resonance Imaging) can provide excellent morphology and high anatomical resolution. Incorporating high-resolution anatomic MRI with functional PET improves the quantitation of PET data.

The new quantification tools include image registration, segmentation, classification, and MR-based attenuation correction and were integrated into a single scheme for processing data. This new combined output will provide physicians with a much more precise image with which to evaluate the condition of the patient.

This type of innovation in [imaging technology](#) at the cellular and molecular level has the potential to make an immense impact on disease detection. "The combined MR/PET system can open a new window to studying diseases including Alzheimer's, Parkinson's, drug addictions, cancer, and cardiovascular disease," Fei says.

In the human body, a metabolic change precedes the mutation of cells that form tumors. This technology can be used to detect this metabolic change very early, which will allow treatment to begin much earlier and be more effective. This software helps improve quality and accuracy of the images obtained from PET scans, allowing physicians to see more details. It has the potential to have applications in many different fields.

"Dr. Fei is working on the bleeding edge of technological innovation," says Philip Semprevio II, licensing associate in OTT. "His technologies have the promise to be incorporated into the next generation of imaging devices and the software that drives the data extraction from those devices. We look forward to seeing the change in the quality of care for patients that will benefit from commercialization of these technologies."

Moving forward, Dr. Fei and his team are seeking funding and industry collaborations. With the right funding, more engineers and computer scientists can be hired, allowing the technology to become a commercial

product, be used in more hospitals, and have a larger impact.

More information: A technology brief is available online:
emoryott.technologypublisher.com/technology/6598

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