HIGHER ORDER TENSOR BASED VASCULATURE MODELING

This invention presents a new method for extracting a whole vessel tree using Higher Order Tensor (HOT) flux-based tractography idea. This method offers seamless modeling of the n-furcations jointly with tubular sections within the same space mathematical model.

Potential Applications

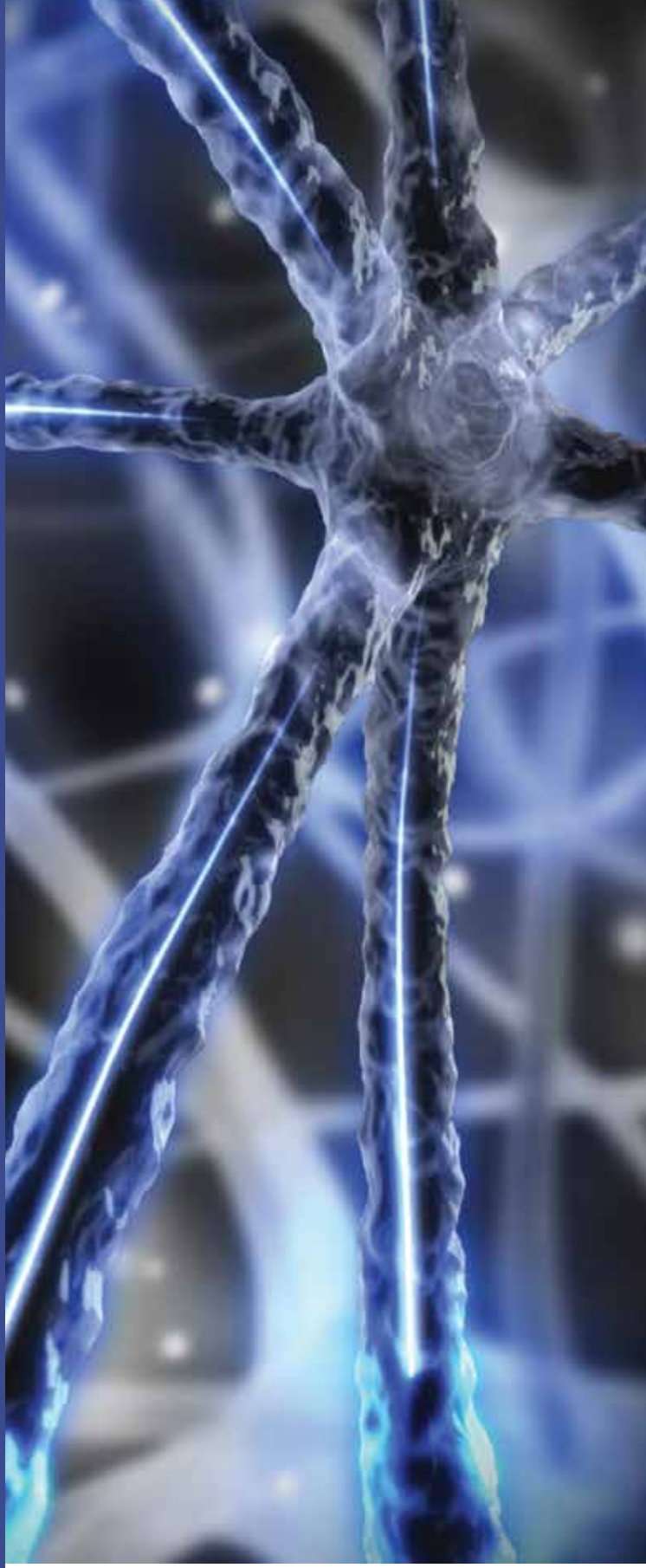
- Stand-alone usage by doctors for visualizing and exemining patient's vascular structure
- Usage by medical laboratories for analysis of patient vascular data
- Making measurements for monitoring health of vascular structures such as; coronory arteires, cerebral arteriesor veins for a patient
- Detecting pathologies in the vascularate stenosis in coronaries or cerebral aneurysms in cerebral vascularate

Customer Benefits

- Increased efficiency for analyzing their patient's data
- More accurate models of patient vasculature
- Faster than previous technologies, only few seconds to extract the whole vascular tree
- Low cost stand-alone software

Technology Features & Specifications

Extraction of vascular structures such as coronory and cerebral arteires is an important step in detection and analysis of vessel anomalies and pathologies such as aneurysms, stenosis and plaques. This novel technology brings a new solution that using computer algorithms to extract patient-spesicfic vascularute models using patient's own medical imaging data (Comuted tomography, MRI etc) are needed.



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First novelty of this technology extracts the vascular surface together with modeling of the n-furcation of the vessel.

Second distictness is the introduction of asynmetry into the higher-order tensor modeling by carrying the space from 3-Dimensions to 4-Dimensions. These features provide well-fit to problem of n-furcatıon modeling in the vessel.

Market Trends and Opportunities

According to the National Institute of Mental Health in the U.S. about 1 in 4 adults suffer from brain disorders every year, with almost 6% of the population suffer from serious disabilities. Thus, for the diagnosis of these disorders rapidly new tools are being developed for more patients centered and personalized treatment. In the near future Asia-Pacific region is expected to witness significant growth to meet the massive unmet need for early diagnosis and disease monitoring.

Factors such as increase in geriatric population, investment in R&D and improved understanding of the nature of neurologic diseases are driving the market growth globally. Since, aged population is more prone to brain disorders therefore; increase in geriatric population will likely increase the neurodiagnostics market worldwide. Additionally, as per the World Health Organization, by 2020 nearly 14.1% of the world population will suffer from neurologic disorders, which would further lure manufacturers to venture into this market.

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