Early Detection of High Blood Pressure: MRA-Based Framework for Diagnosing Hypertension (19015)

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Technology description

Researchers at the University of Louisville have developed a novel framework to predict hypertension before its onset, allowing early intervention.

RDF #19015

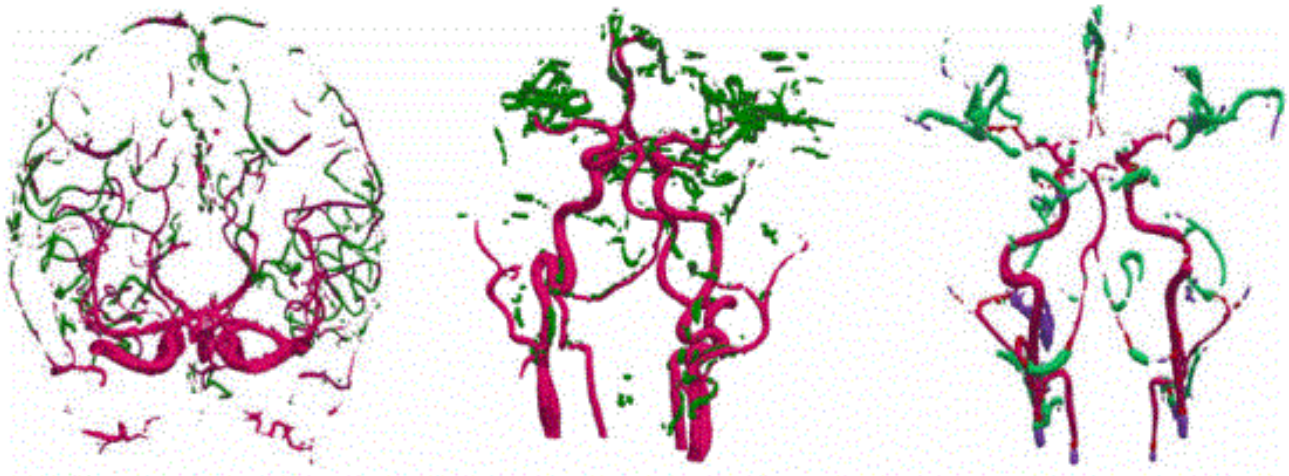
Technology

One in three adults have high blood pressure (hypertension), which can damage the body and even lead to death. Due to the condition’ s high prevalence and mortality, there is an urgent need for technologies that can help prevent hypertension.

To address that need, researchers at the University of Louisville have developed a novel framework to predict hypertension before its onset, allowing early intervention.

The framework works by rapidly and automatically segmenting both large and small blood vessels from MRA data. It then uses the segmented vessels to accurately measure and quantify cerebrovascular changes. Because certain cerebrovascular changes precede hypertension, the framework is able to predict hypertension based on these measurements.

Predicting high blood pressure before its onset may lead to a drop in the prevalence of high blood pressure and, consequently, save lives and money. According to Centers for Disease Control and Prevention, high blood pressure costs the U.S. an estimated $48.6 billion each year.



(Above)sample output of the segmentation framework: a 3-D visualization of results using a growing tree model.

Publications: Kandil, Heba, et al. "A novel MRA framework based on integrated global and local analysis for accurate segmentation of the cerebral vascular system."Biomedical Imaging (ISBI 2018), 2018 IEEE 15th International Symposium on.IEEE, 2018.

Advantages

Automatic, rapid, and accurate 3-D segmentation of cerebral blood vessels;

Detects and accurately quantifies cerebrovascular changes using MRA images;

May enable clinicians to better manage prehypertension and hypertension and mitigate risk of dementia, strokes, and other adverse cerebrovascular events.

Institution

University of Louisville

Inventors

Ayman S.

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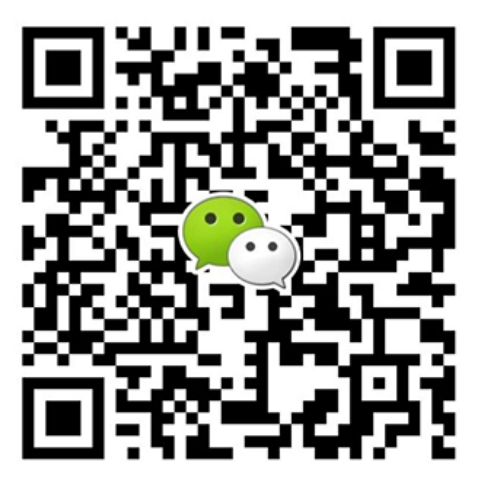

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