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3D IN VIVO VASCULAR STENT RECONSTRUCTION

IMAGING

Diffeomorphic mapping algorithm that enables high-resolution stent reconstruction in vivo.

TECHNOLOGY TYPE

Diagnostics
Optical Coherence
Tomography

STAGE OF DEVELOPMENT

- Algorithm validated through benchtop testing.

- Undergoing clinical prototyping.

LEARN MORE

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TECHNOLOGY SUMMARY

Stent strut malapposition has been shown to increase the possibility of stent thrombosis, and is the cause of stent failure in up to 34 percent of stent failures. The emerging gold standard for detecting stent malapposition is optical coherence tomography (OCT). Yet, OCT imaging is unable to assess the complete area of the stent, causing clinical decision-making to be based on subjective stent size cut-off points.

University of Utah researchers have developed fully-automated software to enhance OCT imaging with diffeomorphic mapping techniques. This software enables visualization of the entire stent with high definition. Such high-resolution reconstruction allows for more precise evaluation of procedural success and the need for post-deployment interventions.

FEATURES AND BENEFITS

- Offers high-resolution reconstruction of stent.
- Fills in shadows inherent to typical OCT imaging.
- Automates reconstruction.
- Facilitates imaging of non-physical deformations of stent form constraints.

RECENT PUBLICATIONS

Elliott, M. R., Kim, D., Molony, D. S., Morris, L., Samady, H., Joshi, S., & Timmins, L. H. (2018). Establishment of an Automated Algorithm Utilizing Optical Coherence Tomography and Micro-Computed Tomography Imaging to Reconstruct the 3D Deformed Stent Geometry. *IEEE Transactions on Medical Imaging*. DOI: [10.1109/TMI.2018.2870714](https://doi.org/10.1109/TMI.2018.2870714)

INVENTOR PROFILE

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