Docket #: S20-251

Clinical transrectal imaging system for detection of prostate cancer using dual ultrasound and photoacoustic imaging

Researchers at Stanford University have developed a clinical transrectal imaging system for detection of prostate cancer using dual ultrasound and real-time photoacoustic imaging. The standard-of-care for prostate cancer diagnosis is performing a transrectal ultrasound-guided biopsy which provides images of the tissue structure but lacks the molecular information to accurately distinguish between benign or malignant prostate tissue. To improve the accuracy of prostate cancer diagnosis researchers have developed a new dual imaging system which combines ultrasound imaging for anatomical data and photoacoustic imaging for molecular information based on light absorption. In addition, they have developed an algorithm, SPANNER, which utilizes reconstruction techniques to provide photoacoustic images in real-time while mitigating the effects of limited viewing angles and low signal-to-noise. This combined system is able to achieve high contrast between exogenous and endogenous factors such as blood oxygenation and hemoglobin content, providing useful information to help guide physicians as they take biopsy samples or perform guided surgery. This technology can be used in place of the standard transrectal ultrasound system, with the added function of photoacoustic imaging, making it an exciting technology for companies in the transrectal ultrasound field.

Applications

- Real-time clinical transrectal dual imaging for prostate cancer diagnosis

Advantages

- Integrated photoacoustic method achieves high contrast of endogenous and exogenous factors such as blood oxygenation and hemoglobin content
- Can be used in place of a standard transrectal ultrasound device with added function of photoacoustic imaging
- SPANNER software reconstructs photoacoustic image in the presence of limited view and low signal-to-noise

Patents

- Published Application: 20220139004
- Issued: 11,854,124 (USA)

Innovators

- Idan Steinberg
- Sanjiv Gambhir

Licensing Contact

Jon Gortat

Licensing & Strategic Alliances Director for Physical Science

Email