Method for measuring the intraocular pressure of the eye-globe and biomechanical properties of the cornea or sclera

Summary

The technology is a device to measure intraocular pressure and biomechanical properties of an eye. The system consists of an air-puff delivering device, an air-pulse delivering device, and an optical coherence tomography device with a function extension to evaluate the biomechanical properties of an eye tissue. Unlike the standard air puff, this technology uses a range of air puffs having different magnitudes which correlate to different eye properties, expanding the total amount of data collected. The technology is a significant advancement from the currently used air-puff delivery devices and allows for more quantifiable data to be collected about a patient's eye. Collecting more data about a patient's eye in a single test is not only more efficient but also improves the overall accuracy of eye doctors looking for signs that are indicators for future eye disease.

Competitive Advantages

- Ultra-fast eye test that provides more data than collected by systems currently in use.
- More accurate compared to the current state of the art at predicting ocular disease.

Problem Addressed

- The most effective method for overcoming an eye disorder is improving the method for early diagnosis. Currently used methods including optical elastography, are limited with regards to the amount of data and the data being quantifiable. This is a limitation of techniques using just one type of air puff. Limiting the data collected regarding the eye's properties and health reduces the accuracy of detecting a broader range of eye disorders that could otherwise be resolved if detected earlier.

Meet the Inventor

Dr. Kirill Larin

Professor, DEPARTMENT of BIOMEDICAL ENGINEERING

Applications

- Ultra-fast eye test that provides more data than collected by systems currently in use
- More accurate compared to the current state of the art at predicting ocular disease.

Patents

- PCT/US2017/038799

Publications

- Han Z., and K. V. Larin et. al (2016). "Analysis of the effect of the fluid-structure interface on elastic wave velocity in cornea-like structures by OCE and FEM." Laser Physics Letters 13(3): 035602
- Li, J. and K. V. Larin (2016). "Assessing mechanical properties of tissue phantoms with non-contact optical coherence elastography and Michelson interferometric vibrometry." Journal of Biomedical Photonics and Engineering 1(4): 229-235.

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