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Visual Field Point-Wise Analyzer

Tech ID: 25908 / UC Case 2016-786-0

SUMMARY

UCLA researchers have developed a novel algorithm to track and predict the progression of patients with glaucoma.

BACKGROUND

Patients with glaucoma experience optic nerve damage, leading to visual field loss along the periphery. Loss of the visual field is monitored using perimetry, which produces visual field data. Analysis of those fields over time can track the progression of a patient's disease. Several software suites currently exist to synthesize this pool of data, track visual field loss, and predict future changes. However, all existing analytical methods use various forms of linear regression analysis, and head-to-head comparisons have shown that exponential regression analysis is a better predictor of future progression.

INNOVATION

UCLA researchers have developed a software package that analyzes visual field data of glaucoma patients collected over time. Using exponential regression analysis, this software better predicts the progression of glaucoma in the patient. The software synthesizes data collected from the commonly-used Humphrey Field Analyzer (Zeiss).

APPLICATIONS

- Monitoring of glaucoma progression
- Can be used as a complement to existing systems based on linear regression analysis
- Monitoring progression of macular degeneration

ADVANTAGES

Analysis based on exponential regression analysis instead of linear

- Head-to-head competition: Exponential regression analysis wins!
- Usually a better fit
- Consistently proves a better predictor of future changes
- Uses same data input as other software systems

STATE OF DEVELOPMENT

Software has been created and validated using patient data

RELATED MATERIALS

- Caprioli, J. et al. (2011). A method to measure and predict rates of regional visual field decay in glaucoma. Invest Ophthalmol Vis Sci, 52(7):4765-73.
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- Morales, E. et al. (2016). Enhancement of visual field predictions with pointwise exponential regression (PER) and pointwise linear regression (PLR). Transl Vis Sci Technol, 5(2):12.

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OTHER INFORMATION

KEYWORDS

Glaucoma, regression analysis, exponential regression, linear regression, visual field decay, visual field loss, pointwise exponential regression, perimetry, Standard Automated Perimetry (SAP), software

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