

“An Automated System for Detection of Neurological Disorders and Deficits”

VCU #12-116

Applications

- Detection and differentiation between neurological conditions
- Pre-diagnostic screening tool for Parkinson's, essential tremor, stroke, hydrocephalus, TBI, and other neuronal conditions.

Advantages

- Automated system provides instantaneous, objective assessments
- Highly reliable
- Non-invasive and rapid
- Cost effective

Inventors

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Market Need

Even for specialists, it is regularly difficult to definitively diagnose neurological disorders. This commonly hinders establishing an appropriate treatment plan, resulting in lower quality of life and increased health care cost. Further, with advances in therapies aimed at slowing disease progression, the means to diagnose neurological disorders *prior* to the onset of symptoms is of outmost importance.

Technology Summary

The present technology is an automated eye tracking analysis system that detects and analyzes eye movements as a means to accurately diagnose neurological diseases. Normal eye movements are highly regulated and follow well defined patterns. In disease states affecting the central nervous system, eye movements are altered in a fashion specific to the underlying disorder. The developed analysis system assesses for numerous eye movement abnormalities and in combination, utilizes them to identify the underlying neurological disorder. This technology includes a matrix for identifying such neurological disorders as Parkinson's disease, essential tremor, stroke, hydrocephalus, head injuries, progressive supranuclear palsy, Malingering, and many others. Notably, the technology will also reliably detect some disorders, including Parkinson's disease, in preclinical stages.

Technology Status

The technology entails algorithms with an implemented decision matrix.

Patent pending: U.S. and foreign rights are available.

The publication by the inventors discusses eye movement abnormalities specific to Parkinson's Disease: George T. Gitchel, M.S., Wetzel, Paul A., Ph. D., and Mark S. Baron, M.D. "Pervasive Ocular Tremor in Patients with Parkinson Disease." *Archives of Neurology* 69 (2012): 1011-017.

This technology is available for licensing to industry for further development and commercialization.