

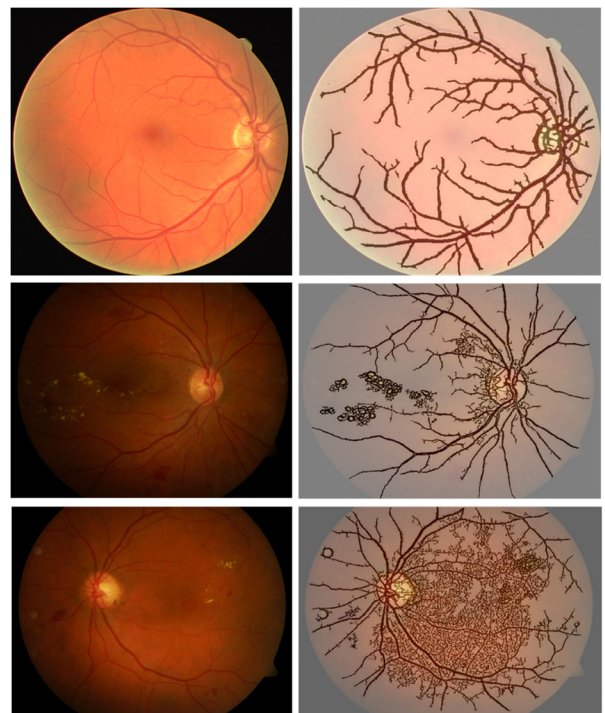
# Automated Computer Classifier of Diabetic Retinopathy and Macular Degeneration

OU ID: #15015

## Overview

With an ever-increasing number of people being diagnosed with diabetes, it is imperative that new technologies be developed to effectively and efficiently monitor the disease and its associated comorbidities—including diabetic retinopathy, one of the leading causes of new blindness diagnoses in the U.S. Early diagnosis and targeted treatment of this condition is imperative in order to delay or prevent vision loss, making technologies that are able to accurately identify the early stages of diabetic retinopathy highly valuable.

Researchers at Ohio University have developed a computer-assisted technology capable of detecting, classifying and monitoring diabetic retinopathy. Using machine learning techniques, digital photographs are manipulated in a manner that provides enhanced visualization of retinal blood vessels without the use of injected, florescent dyes to non-invasively detect and stage the disease. The technology provides over 98% classification accuracy for discriminating healthy normal retina (top) from non-proliferative diabetic retinopathy (NPDR; middle) and proliferative diabetic retinopathy (PDR; bottom).



## Benefits

- Utilizes a combination of image features to achieve optimal classification accuracy
- Potential for technology to be developed into an e-health digital system for better management of diabetic retinopathy outside of the formal healthcare setting

## Patent Information

- US 2018/0235467— Allowed



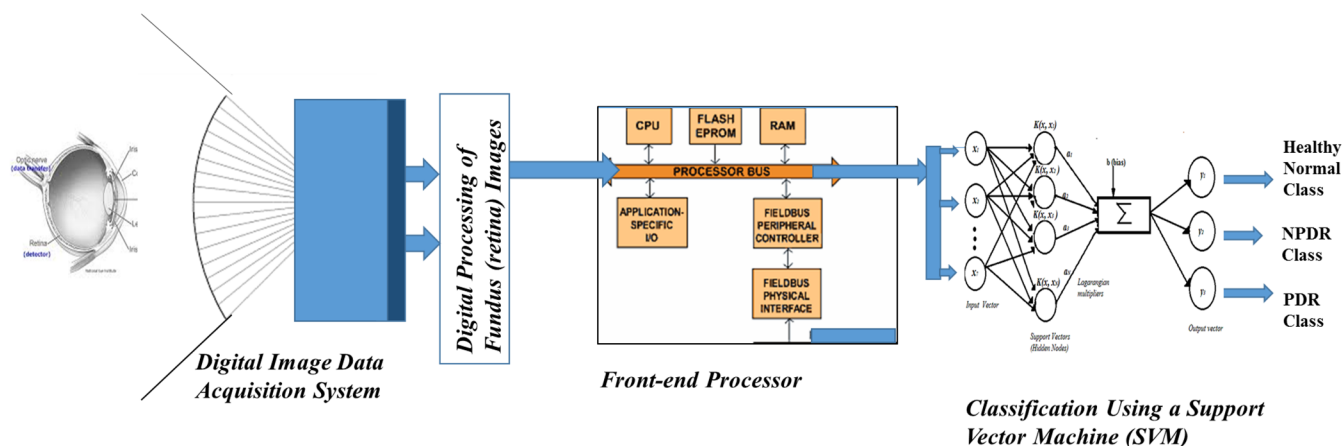
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# Automated Computer Classifier of Diabetic Retinopathy and Macular Degeneration

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## Commercial Application

- Improved diagnostic system for eye care professionals
- Mechanism for primary care physicians to monitor the eye health of their diabetic patients without needing to refer them to an eye care specialist
- Software can be integrated with a digital system (smartphone, tablet, laptop) to provide diagnostic capabilities outside of the traditional care setting



## Inventors

Mehmet Celenk, Ph.D., Professor, Electrical Engineering and Computer Science. Dr. Celenk received a Ph.D. from Stevens Institute of Technology in EECS and joined Ohio University in 1985.

H. Bryan Riley, Ph.D., Associate Professor, Electrical Engineering and Computer Science. Dr. Riley received a Ph.D. in Electrical Engineering from Ohio University and then joined as a faculty member in 2010.

Frank Schwartz, M.D., FACE, Professor of Endocrinology and James. O. Watson Endowed Chair for Diabetes Research, Ohio University Heritage College of Osteopathic Medicine. Dr. Schwartz received his Doctor of Medicine (M.D.) from West Virginia University and has over 30 years of clinical experience.

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