Researchers at the University of South Florida have developed a method that permits the automated grading of the severity of vitritis by applying a computer algorithm to clinical fundus images.

Vitreous haze serves as a surrogate marker for intraocular inflammation caused by a variety of inflammatory diseases known as uveitis. The estimation of the amount of the haze is subjective, so a standardized system for grading of the vitreous haze has been proposed through the use of a digital photographic scale. However, there is often disagreement between multiple graders of the exact value of the grade and it takes a significant amount of time to perform the grading.

USF inventors have designed and implemented a computer algorithm to produce a rapid and unbiased measure of fundus clarity that strongly correlates with clinical grading. The algorithm could be used on at clinical reading center or as a stand alone device during patient examination. The invention executes a series of image processing steps using predefined parameters to compute a blur grade and quantify the clarity of ocular fundus images. It allows a more accurate, quick, and reliable grade of vitreous haze in an unbiased manner compared to the currently used standardized grading, which also requires a high level of training. This improved method will enhance the diagnosis of the ocular diseases so that adequate treatment can be provided.

**ADVANTAGES:**
- Algorithm produces grading correlating that of a clinician’s
- Method can be implemented during patient examinations
- Quick results

**Automated Grading of the Severity of Vitritis**

Top, fundus images showing different levels of optical clarity and their typical blur scores. Bottom, comparison of blur scores assigned by three highly-trained clinical graders and the USF researchers’ computer algorithm to a database of 100+ fundus images collected at several clinics across the country. The $R^2$ correlation statistic between the algorithm and expert graders was comparable to that between the graders themselves.

Tech ID # 14A023  Patent #: 9,384,416