

II. ABSTRACT

The long-term goal of this project is to design more efficient and effective rehabilitation programs for patients with age-related macular degeneration (AMD). AMD often results in a blind spot in the central visual field that hinders the patient's ability to read and recognize objects. Current rehabilitation programs teach these patients to rely more on their peripheral vision for such tasks. Although rehabilitation is generally beneficial, patients with a similar pattern of vision loss may experience different outcomes. Specialists attribute this to the efficiency of their scanning, or eye movement behavior. This proposal seeks to quantify the efficiency of scanning strategies in AMD persons as they move their eyes to learn an unfamiliar shape. We compute the amount of visual information gained with each "look" at the shape, or fixation. The more information gained on a fixation, the more efficient the scanning strategy. By this same reasoning, we will design optimal strategies that maximize the information gained from a series of fixations. We will guide our observers to use these optimal strategies and measure how well they are able to learn the unfamiliar shapes. The results of this study will allow us to design more effective rehabilitation programs based on *quantitative* measures of eye movement strategies.