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Tool to Quickly and Automatically Grade Complex Figure Assessments in Neuropsychological Clinical Practice

The Rey Osterrieth Complex Figure Test (ROCFT) is an important tool used in neuropsychology among older patients to evaluate cognitive decline based upon visuospatial memory. In the ROCFT, a patient completes 3 drawings of a complex figure. These drawings are then graded by hand using specific grading criteria. There are currently no automatic techniques capable of grading these drawings, thus this assessment has to be completed by a trained clinician and is time consuming, tedious and subsequently underutilized.

A researcher at Arizona State University has developed an algorithm that can take digital pictures of these drawings and grade them without requiring human assistance. This algorithm is reliable, automatic and rapid, making assessments easier and saving the clinician valuable time. The algorithm can be implemented within a web-based application where patient drawings can be scanned and graded within a matter of seconds. This algorithm was constructed with a compiled dataset of 134 ROCFT drawings from cognitively intact older adults that were graded manually.

Automatic grading of this important clinical assessment is not only 400 times faster with this algorithm, it also takes a tedious task and completes it with reliability and human accurate grading.

Potential Applications

- Automatic ROCFT assessment grading
  - Could help with mild cognitive impairment diagnosis
  - Could help predict long term outcomes related to motor skill consolidation

Benefits and Advantages

- Reliable and accurate
- Reduces grading time from 20-30 minutes to mere seconds
- Saves clinicians time and effort
  - Could increase the widespread use of the ROCFT assessment
- Available as a web-based tool for added convenience
  - Enables remote scoring
- This algorithm can score a test image close to that of a trained neuropsychologist