Development of an Android Application to Measure Reading Performance in both Clinical and Research Environments

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CONTEXT: The MNREAD ACUITY CHART is a standardized reading test has been designed to measure the reading performance of people with normal and low vision [1] (see also video [2]). Its prominent use worldwide in both clinical and research settings makes it a strong diagnostic tool for reading deficit. In brief, the MNREAD allows to measure how reading performance changes when print size decreases, by presenting a series of short sentences with decreasing size printed on cardboard.

PROBLEM: To respond to the rapid transition to digital reading in our culture, the time has come to adapt reading-acuity measures to evaluate legibility on digital displays. Therefore, the creators of the MNREAD have recently developed an electronic version of the MNREAD test, running on iOS: the MNREAD iPad App ©2017 [3,4]. This digital transition will help standardize reading assessment in several ways: (a) through unified testing and scoring methods that increase inter-tester reliability; (b) by promoting data sharing and portability. However, the MNREAD test is not yet available on Android, while many clinics use this platform for patient-care and data collection.

METHOD: Our main objective is to develop an Android application that will replicate the MNREAD iPad App, while bringing new features. Throughout the developing process, e-ink tablets will be used (e.g., BOOX 13.3”). Once development is completed, the same devices will be used for experimental validation through within-subject comparison.

PERSPECTIVE: In the short run, the MNREAD Android app will serve as a research tool, allowing for instance to generalize the principles of the test to evaluate the effects on reading of dependent variables other than print size e.g., evaluate the readability of a new typeface, letter spacing and line length. In the long run, the MNREAD Android app may be commercialized to serve as a valuable tool in clinical settings.

BIBLIOGRAPHY:
SUPervisors: The candidate will be co-supervised by A. Calabrèse, a psychophysicist specialized in visual neuroscience with a strong clinical expertise, and P. Kornprobst, a mathematician with strong expertise in computer vision and human vision understanding.

COnditions:
- Duration: 6 months
- Starting date: February/March 2020
- Salary: ≈ 550 euros per month.

Curriculum of the Candidate: Applicants should have experience in developing Android applications, a keen interest in user experience, low vision or both, and a relevant Master, for example in computer science, linguistics, digital humanities or natural language processing.

FOLLOW-UP: Funding opportunities to continue for a Ph.D.

TO APPLY: Please visit https://team.inria.fr/biovision/job-offers.