iSULAT:

Intelligent Stroke Utilization, Learning, Assessment, and Testing for Early Childhood Handwriting Evaluation

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THE PROBLEM

Handwriting is a crucial skill in early childhood education, with children spending a significant portion of their academic day engaged in fine motor tasks, including writing. However, handwriting difficulties affect 10%–30% of school-aged children, impacting their academic performance, self-esteem, and cognitive development. Existing handwriting assessment tools rely on manual evaluation by occupational therapists and handwriting experts, leading to subjective results, inter-tool scoring variations, and time-intensive assessments. There is a need for a standardized, intelligent, and efficient handwriting assessment tool to address these challenges.

TECHNOLOGY GENERATOR

University of Santo Tomas
Project Leader: Dr. Edison A. Roxas

THE SOLUTION

iSULAT (Intelligent Stroke Utilization, Learning, Assessment, and Testing) is an intelligent, software-based handwriting assessment and testing system designed for early childhood handwriting evaluation. It features a multisensor pen integrated with an intelligent software system that captures and analyzes handwriting parameters such as speed, stroke angles, and pressure in real-time. By leveraging a normative database of Filipino school-aged children's handwriting, iSULAT aims to provide objective, continuous, and standardized handwriting evaluation. The system reduces the reliance on manual assessments and facilitates early identification of handwriting impairments, enabling timely intervention.

TECHNOLOGY DEVELOPMENT

iSULAT is currently at Technology Readiness Level (TRL) 5, with a working prototype successfully developed and initial sensor calibration tests completed. The project has progressed through alpha-stage testing, integrating multiple sensors to ensure accurate data acquisition. Further refinements are being conducted to minimize noise and improve system efficiency. The team is preparing for comprehensive data gathering and validation against traditional handwriting assessment tools.

The iSULAT development team is seeking collaborations with educational institutions, occupational therapists, and healthcare professionals to validate and refine the system further.