AI-Powered Portable Eye Screening Device for Early Detection of Pediatric Eye Diseases in Low-resource Settings

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With 70% of rural healthcare clinics lacking basic ophthalmic equipment, most parents only end up taking their children for professional eye exams when the problem has already escalated, but the very nature of most pediatric eye diseases is such that the longer they are left to develop, the more difficult and expensive they are to fix and in some cases children can end up with lifelong disability. My research introduces an AI-powered screening device designed to revolutionize pediatric eye care in impoverished regions. Its innovation lies in its ability to detect critical eye conditions such as Strabismus, Retinoblastoma, and Ptosis off a single photo through a cost-effective, portable device that can be transferred from one rural clinic to another, is easy to use, and requires no expert supervision, fundamentally altering the landscape of early disease detection. By using AI to classify digital images captured of the eye with great accuracy and presenting the certainty of diagnosis, the device addresses the pressing issue of limited access to ophthalmic care in rural areas, which currently leaves millions of children at risk of preventable blindness and its associated impediments to educational and personal development and potentially saving healthcare systems millions in late-stage interventions. Through rigorous testing and field validation, including a case study in a rural area where the device accurately identified Ptosis in a toddler, this work underscores the profound impact of technology in preempting vision impairment, paving the way for an entire future generation who've received the eye care they needed when they needed it, potentially reducing the nationwide scale of critical eye diseases over years and ensuring positive outcomes for future generations.

Awards Won: