

## **Title: Application of Computer Vision and Mobile Systems in Education: A Systematic Review**

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**Abstract:** Neurodegenerative diseases like Alzheimer's disease and Parkinson's disease are hard to diagnose and treat early. They are characterized by progressive loss of neuronal function and structure leading to crippling cognitive, motor and psychiatric impairments. In recent years, nano biosensor engineering has emerged as a promising way to address the limitations of traditional diagnostic methods for neurodegenerative diseases. Nano biosensors which combine nanotechnology and biosensing principles can detect disease specific biomarkers with high sensitivity and specificity to enable early and accurate diagnosis. One of the key advantages of nano biosensors in diagnosing neurodegenerative diseases is their ability to detect and quantify specific proteins or molecules that are biomarkers for these conditions. For example, accumulation of amyloid beta peptides and hyperphosphorylation of tau protein are hallmarks of Alzheimer's disease. Nano biosensors can be designed to selectively bind to these biomarkers providing rapid and non-invasive method for early disease detection. This enables more targeted and personalized treatment approaches. Furthermore, nanomaterials have shown potential in biosensing applications due to their unique physical, optical, and electrical properties. Their small size, large surface-to-volume ratio, and tunable properties enable them to interact with biological molecules in remarkable ways. One notable property is their ability to be functionalized with molecular beacons, reporter molecules, pacification layers, and targeting biomolecules, creating highly sensitive and specific bifunctional nanoprobe. This review aims to explore the promising role of nano biosensor engineering in the early diagnosis and management of neurodegenerative disorders.

**Keywords:** Alzheimer's disease Parkinson's disease Diagnosis Nano biosensor

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