Tableware Jitter Elimination Technology for Parkinson's Patients

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The neurological condition of Parkinson's disease causes involuntary shaking of the hands and body, leading to frustration with eating. Current tableware with jitter elimination technology on the market is extremely expensive, such as Gyenno Spoon, 299 USD, and Liftware Steady, 195 USD. They also cannot complete the detection and diagnosis of patients' conditions. Through engineering design and technological innovation, this project developed a low-cost jitter elimination technology that is applied to IoT and minimizes the impact of tremors during eating. It uses artificial intelligence to adapt tableware to various jitter records of the patient's condition and provides a diagnosis. The prototype uses the ESP32 development board as the main control, an MPU6050 gyroscope for motion attitude detection, and a MacBook as the server. The system completes the information transmission between the prototype and the server through the MQTT protocol. It can store the data in the cloud, use the PID algorithm and MLP algorithm for motion control, and use an AI model to diagnose the disease according to the data stored in the server. A 54% decrease in food spilled using the technology was shown, and medical experts on Parkinson's disease also look forward to the product. Additionally, it only costs about 5% of Gyenno Spoon and 7% of Liftware Steady. This technology demonstrates the potential of computerized motor control and artificial intelligence in the medical field, providing new solutions to problems in specific groups.

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