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(57) Abstract :
The invention discloses a neural network device (100) for advanced handwriting recognition, comprising Input Interface (101), Preprocessing Unit (102), Feature Extraction Layer (103), Sequential Analysis Layer (104), Contextual Language Model (105), Recognition Output Unit (106), and Data Storage & Training Module (107). The device integrates deep learning algorithms, contextual correction, and hardware optimization to achieve high recognition accuracy across multiple languages and scripts. Capable of real-time performance and adaptive training, the invention provides robust, scalable, and energy-efficient solutions for document digitization, authentication, education, and human–machine interaction applications.

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