

车载语音识别系统设计与试验 Design and Experiment of a Vehicular Speech Recognition System

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摘要: 用改进的动态时间归整(DTW)算法进行语音辨识,设计了语音识别系统软件,以SPCE061A单片机为核心设计了车载语音识别系统的电控单元(ECU)。在车内不同噪声环境下进行了语音识别试验,结果表明语音识别率随着车内环境噪声的增加而下降,随着语音字数的增加而降低;在车辆怠速车内噪声小于50dB(A)的环境中2字语音平均识别率为90%、4字语音的识别率为85%;在车辆定置油门半开、车内噪声为60~70dB(A)的环境中,2字语音平均识别率为85%、4字语音的识别率为80%。 An improved dynamic time warping (DTW) speech recognition method is proposed. An electronic control unit of vehicular speech recognition system is developed based on chip microcontroller SPCE061A. The corresponding control software is programmed and the speech recognition tests are carried out under the different noise conditions within an experimental vehicle. The test results show that the speech recognition ratio reduces with the increase of the vehicle interior noise level and the speech length. The average recognition ratio is 90% for two Chinese characters speech and 85% for four Chinese characters speech when the vehicle is under the idle running condition and the interior noise is less than 50dB(A). And the average recognition ratio is 85% for two Chinese characters speech and 80% for four Chinese Characters speech when the vehicle is under the fixation and half-throttle running condition and the interior noise level range is from 60 to 70dB(A). The speech recognition results are satisfactory.

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