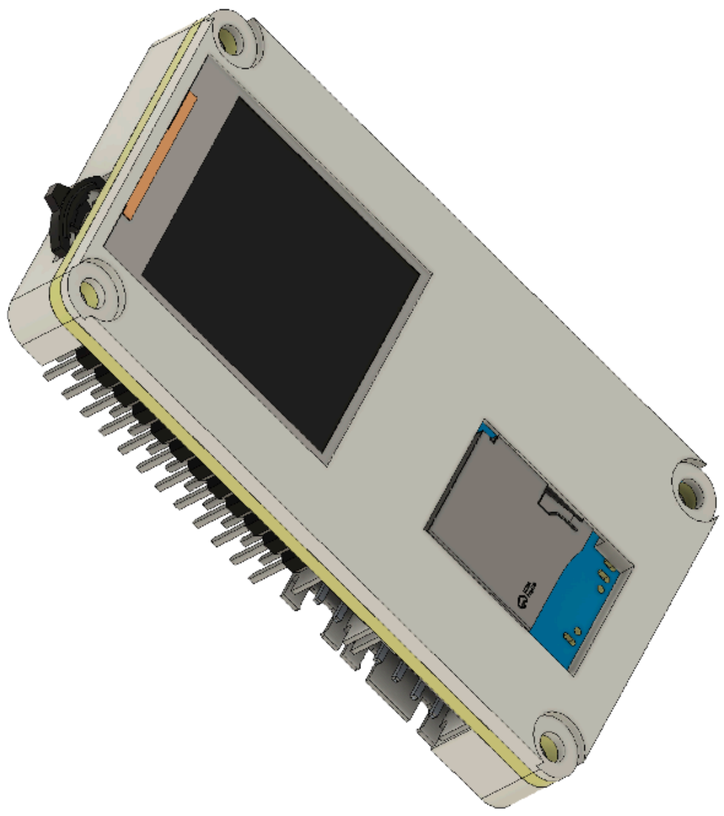


PIONEER: STM32 Smart Vehicle DevBoard

Optimized for four-wheel smart car applications
Accelerated and improved the tutorials in lab

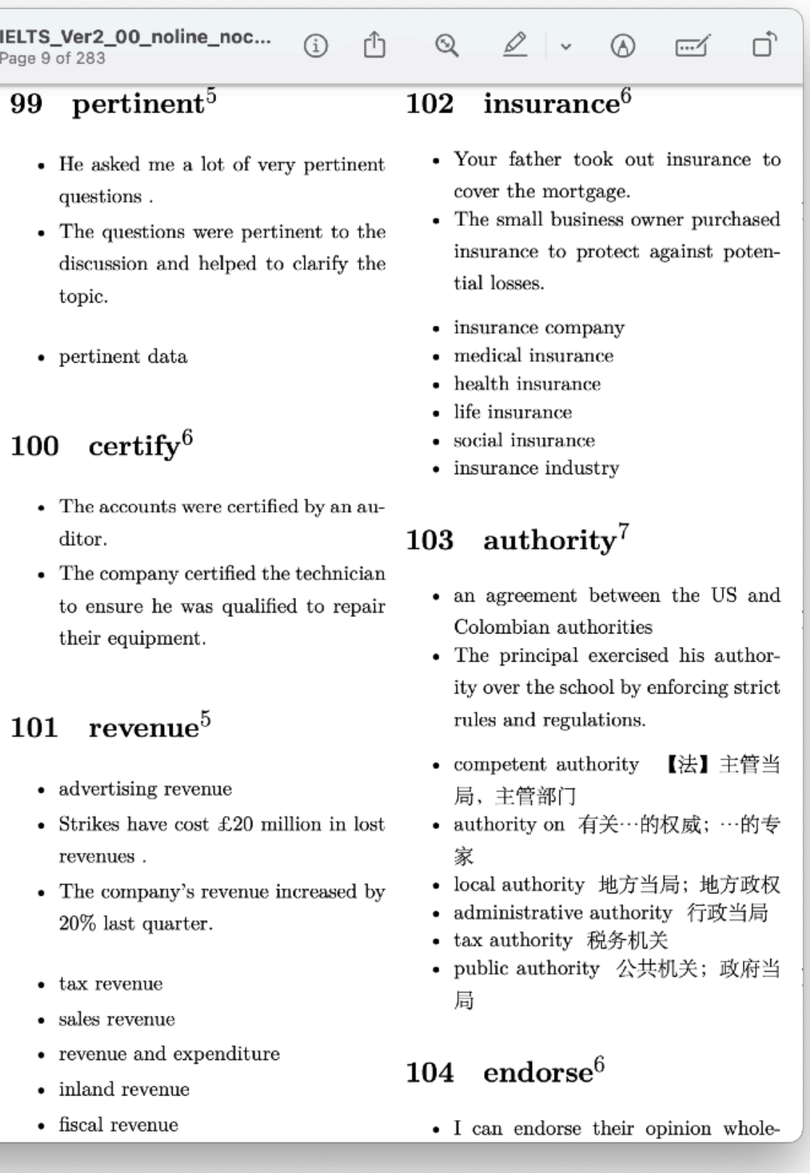
STM32F103RCT6 · 72MHz · 48K RAM · 256K ROM

CAN transceiver | SPI Flash | IMU (MPU6050) | USB | LCD(SPI)

Embedded Software Development :

- Basic Examples: CLK、Debug、IT
- Examples for all peripherals : GPIO、UART（DMA/IT）、SPI（DMA/IT）、IIC（DMA/IT）、CAN
- Examples for smart vehicle application: BLE controller（with ESP32）, Connect to control-board
- Bootloader based on USB-DFU: Download firmware directly rather than through UART nor ST-Link
- FreeRTOS integrated
- Port LVGL（a GUI framework）:
  - Optimization approaching performance limits (SPI through DMA, manual malloc buffer, double frame-buffer)
  - Achieve 30fps@240*240 resolution with acceptable RAM and ROM usage

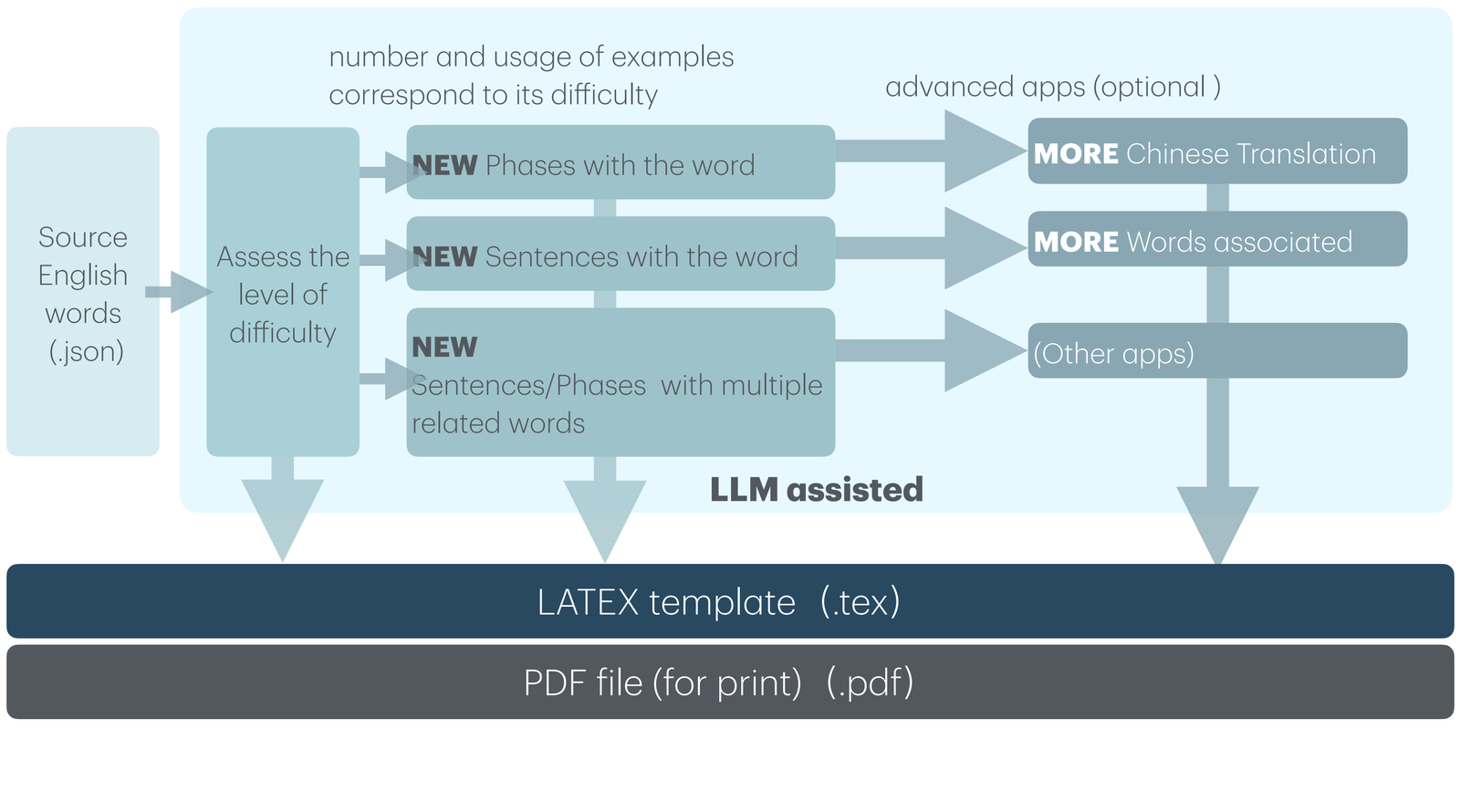
Memory region	Used Size	Region Size	%age Used
RAM:	40232 B	48 KB	81.85%
FLASH:	184084 B	256 KB	70.22%

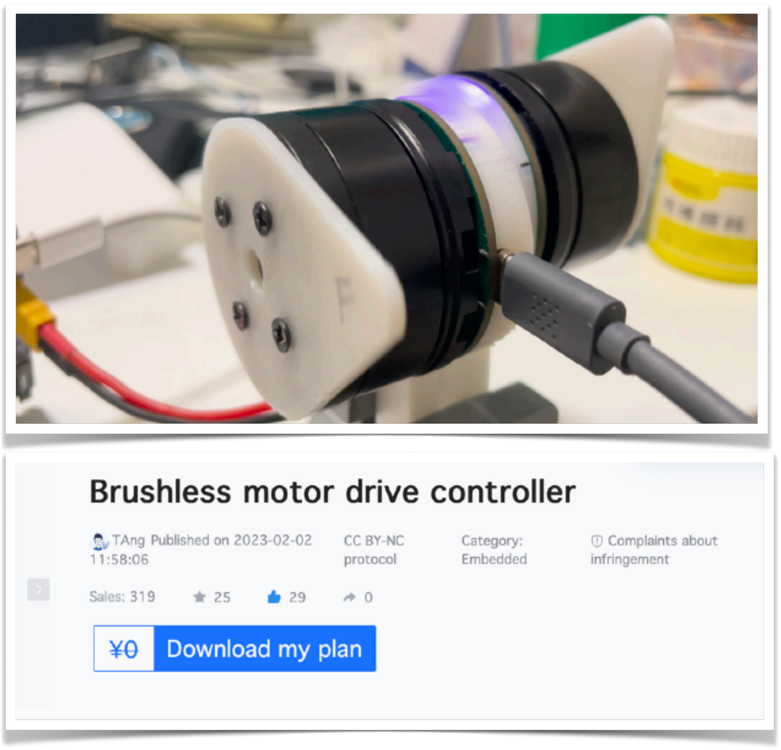


MEMORIZE: LLM Assisted Word Memorization

Generate example sentences of varying difficulty for words
Create Latex-formatted documents.

- Local large language model
- Assess the difficulty of words in real contexts (rather than based on word length), with the difficulty level indicated by the number in the top right corner.

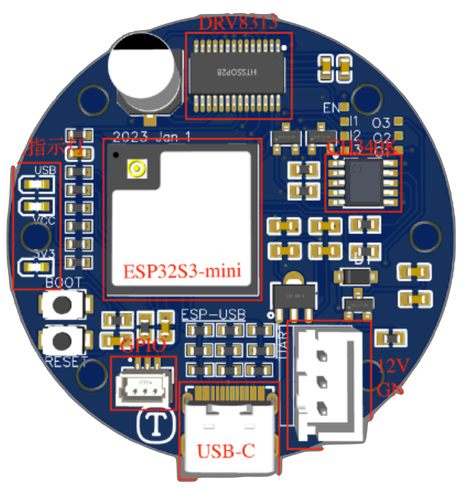




Brushless Motor Drive Control Board

High performance BLDC driver with FOC algorithm

- Achieve 318 sales, ranking in the top 5% of the JLC · Hardware Community.



- ESP32-S3 SOC
- DRV8313 driver（MOS integrated）
- AS5600 magnetic encoder
- Program with C/C++
- Port FOC algorithm (with open-source SimpleFOC)
- Wi-Fi/BLE for command and debug