

Name: Peng Cai  
English Name: cigepan  
School: Hunan Institute of Humanities, Science and Technology  
Education: Full-time Bachelor's Degree  
Major: Electronic Information Engineering  
Age: 30 years old  
Location: Shenzhen, China  
Phone 1: +86-13068712413  
Phone 2: +86-19926580342  
Email 1: cigepan@outlook.com  
Email 2: 1344911247@qq.com  
linkedin: <https://www.linkedin.com/in/cai-peng-38ba763a8>  
Personal Website: <http://www.cigepan.top/resume/>

## I. Development Skills

Programming Languages: 8 years C++ / 5 years QT & QML / 3 years backend / 2 years embedded  
Databases: MONGODB > SQL  
Environments: Linux > Windows  
SDKs: QT / OPENGL / OPENCV / EMSDK / STM32

## II. Work Experience

- > Tuobang Co., Ltd. (BMS Energy Storage / Listed Company) 2024.10-2026.03
  - > Keywords: QT / QML / PC Application Development / Embedded Backend Development / redis / http
  - > Completed development of new energy storage configuration tool from scratch (0 to 1), using tree graph + MVC list hybrid management for various business data, maintained embedded backend program for lower computer, deployed local small AI models to optimize text-to-tool process, customized abstraction of 50+ business node classes
  - > Modules: Project / Collection / Alarm / Forwarding / Statistics / Topology / Debugging / Scheduling / Secondary Board / Monitoring / Analysis / Template
  - > Combined with AI programming to quickly complete general configuration software PC platform development, supporting configurable PC generation, custom drag-and-drop layout interaction, third-party communication device communication and simulation
  - > Assisted in completing some embedded application module or interface-related development work
  
- > Yuanrong Qixing (AI Autonomous Driving / Series B / Toolchain) 2021.12-2024.9
  - > Keywords: QT / HTTP / OPENGL / MONGODB / NFS / K8S
  - > Main Content: Developed 3 backend services and 4 client tools from scratch (0 to 1)
  - > Achievement Metrics: Adapted 30+ annotation production lines, 1K+ daily active users, managed 3K+ users, 300K+ task information, 1M+ daily transaction interface processing, 1M+ daily forwarded files
  - > 3D Rendering: Point cloud height / intensity / line interval / XY interval / 4D frame stacking, mixed MESH / multiple 2D materials, CPU / GPU concurrent editing and rendering calculation
  - > Technical Complexity: Complex large-scale point cloud interaction and rendering editing, mass production stability maintenance

> Business Complexity: Supported 2D / 3D / 3D semantic segmentation, covering 90% of perception department's special business requirements for data annotation, supported 30+ different annotation production lines

> Jinzheng Technology & Fuxin Capital (Finance / Listed) 2020.11-2021.12

> Keywords: MONGODB / SQL / SHFE CTP

> Option Risk Control Business Backend Development: Mainly developed risk conversion for user option positions and funds combined with option business before option exercise date

> CTP Quantitative Market Platform: Market platform developed based on SHFE CTP interface

> Han's Laser (Listed Company / Industrial Equipment) 2018.3-2020.6

> Keywords: QT / MFC / SOCKET / OPENGL / Point Cloud Image Processing / Path Optimization / Industry 4.0 / Mass Production Experience

> Designed and customized Han's Laser automation MFC / QT marking software according to various manufacturers' business requirements, basically using SOCKET / HTTP / barcode scanner to read data, then CCD image detection and positioning, finally controlling laser marking

> Foxconn and Wistron production line famous phone IMEI marking: Read device IMEI information through relevant SOCKET according to internal industrial data closed-loop interface provided by product owner, generated laser engraving path information, finally controlled laser for engraving, after production completion, transmitted various information generated during production process back to manufacturer server through SOCKET, stored production data with SQL

> 3D Internal Engraving: Parsed dxf / pcd 3D point cloud or various format image data, displayed through OPENGL, performed vector path optimization for 3D point cloud data and images to improve production efficiency, used OPENCV for multi-layer grayscale threshold filtering then binarization processing finally producing 3D relief effect, provided denoising, contrast and brightness adjustment functions

> Fuwicro Technology (Drone / Embedded Driver) 2017.6-2018.3

> Keywords: STM32 / Driver / Bluetooth AT / 2.4G / IO Timing

> Mainly developed drivers and interface code for drone-related sensor devices, developed drivers combined with hardware schematics: Gyroscope accelerometer (SPI + DMA), miniLED (IIC), temperature humidity sensor (IIC), Bluetooth (UART), GPS (UART), NRF2.4G (CAN / SPI + DMA + frequency hopping logic), ultrasonic (single bus), power battery (ADC), motor control (IIC + PWM), ESP8266 (UART)

> 2.4G Wireless Frequency Hopping: Evenly extracted 32 frequency points within specified frequency range, transmitted with synchronized frequency hopping according to certain rules, used specific frequency points for synchronization when transceiver lost step, achieved multi-frequency point fast synchronization

> Smart Robot: Connected to mobile phone via Bluetooth, mobile APP cooperated with network cloud for voice dialogue, mobile end could also perform standalone action control, personally responsible for development of various motor / steering gear drivers, limit switches, current collection and Bluetooth transceiver driver modules

> Microcontroller Overclocking: Mainly focused on overclocking development and

stability testing for domestic STM32, fully explored chip overclocking performance to achieve cost reduction and efficiency improvement

> Pandemic Part-time (Spare Time or Unemployed Period)

> Keywords: Android Flashing / AT Commands / ADB Commands / Window Capture / Virtual Buttons

> Windows Window Splitting QT: Customers used Calait's multi-video roadshow equipment to control multiple screens with one computer, remotely controlled computer through WIFI to control screens, main function was implementing HWND to QWidget conversion, finally operated QWidget to perform size, displacement, copying, embedding, directed to split-screen and other functions on any Windows windows, file management and multi-task viewing operations, software supported virtual button mapping function, could bind to different interface windows and present different keyboard mapping layouts

> AFTOOL Flashing Software - Broken Screen Protection Detection QT: Read mobile phone screen information through AT and ADB commands, read server manufacturer's screen customization information through SOAP-converted web interface, then compared to identify whether illegal screen. Mainly provided to authorized repair shops to identify whether privately replaced screens or intercept third-party pirated screens

> School Experience High School - University 2010-2017

> Keywords: Microcontroller / Driver Principles / Competition / Cracking / Taking Orders / PC Assembly / Schematic / Overclocking

> Research Learning: Agricultural Greenhouse Control System: Mainly collected air temperature humidity (DHTXXX - single bus), soil moisture (ADC), light intensity (ADC / IIC), uploaded to LAN PC or mobile Bluetooth connection for viewing, could automatically or manually control (PWM) fan ventilation, shading, irrigation spraying and other functions, received provincial R&D 20,000 yuan funding

> Laboratory: Participated in electronic competitions during university and won first prize in school competitions, implemented some classic open-source projects during laboratory time, such as two-wheel PID self-balancing car, inverted pendulum, ECG collection and others

> Crowdsourcing Customization: Undertook nearly 30 graduation project physical developments during university, provided buyers with basic perforated board demo hardware implementation and supporting software, familiar with multiple embedded module applications, have some schematic drawing ability

> Bubble Community: MRP and Mobile Dream Network: \*#220807# launched third-party customized menu could load various third-party cracking programs, achieved customization personalization and cracking through HEX editor combined with decompression and packaging tools, implemented 刷钻 through carrier point-to-point SMS communication delay method to quickly cancel after trigger activation

> Question Bank Cracking: Unlocked exam question bank MDB through third-party tools, reverse-converted RTF encoded content to text, performed question search through specific keywords and obtained answers, 拆解 big problems into small problems, then used internet to continuously learn and overcome one by one

> PC Assembly: Customized boot animation after ROOT, removed pre-installed apps, ran cracked games after Xpose framework installation, have some flashing / computer

assembly / system reinstallation experience, once achieved Linux + Windows + MacOS triple system coexistence installation on ordinary computer, often helped classmates solve various computer problems during school, have some graphics card / CPU / memory overclocking experience

Personal Website: <http://www.cigepan.top/resume/>