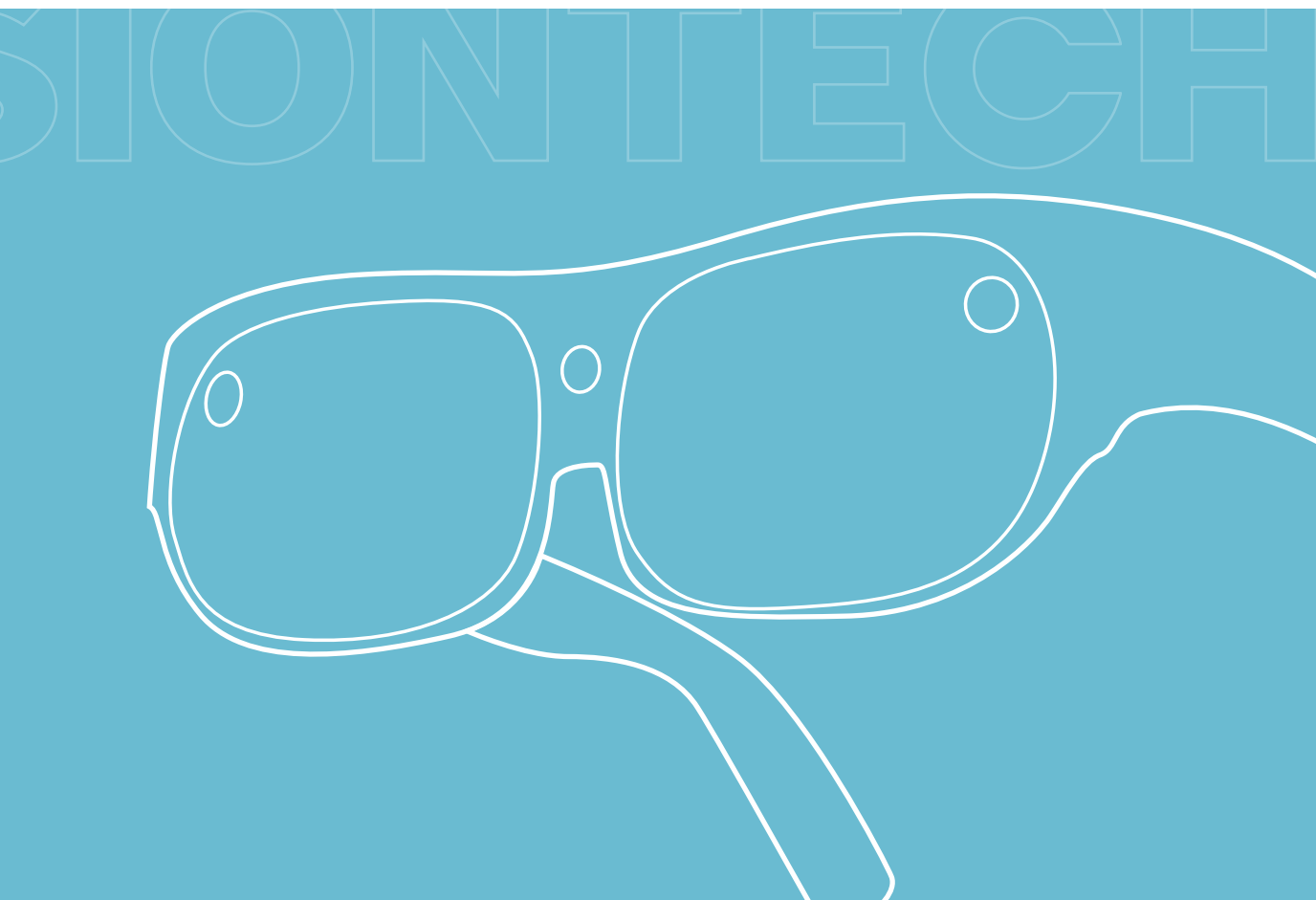
MESIONTECH



Company Profile

MESIONTECH

Mesiontech is a company that provides coprocessors, algorithms, and total solutions to the virtual reality industry.

We have developed a low-power, low-latency spatial computing coprocessor, the A1088. This coprocessor can offer excellent 6DoF spatial positioning and display rendering compensation (PTW/ASW) for AR/VR glasses, addressing the requirements of low power consumption, low latency, low heat generation, high precision, and lightweight for XR glasses.

Mesiontech coprocessor's multiple core products have been validated by millions of users and possess complete algorithm, coprocessor, module, and system design capabilities in various aspects, including 6DoF spatial positioning, low-latency rendering, optical calibration, cloud mapping, free gestures, AR/VR glasses, and self-tracking controllers. This enables us to provide comprehensive solutions and efficient R&D support to XR arenas.

MESIONTECH

The first tech company focusing on XR interaction algorithms and specializing in dedicated chips as main business

The algorithm capabilities have been recognized by leading domestic and international manufacturers, completing algorithm licensing agreements with several top clients in various industries.

The progress in chip development is significantly ahead of domestic industry competitors, and chip testing was completed in October 2023.

The development and commercialization of products, including algorithms, chips, modules, and complete system solutions, have been completed.

Empowering industries

The first launched spatial positioning chip for AR/VR applications in China.

Algorithm chipiflcation for focus, reducing manufacturers "repetitive wheel reinvention"

Reducing the product development cycle for manufacturers

Low latency rendering algorithm is suitable for AR/VR with high demands

Meeting XR device's low power consumption, long battery life, and spatial interaction requirements

Able to achieve both extremely low latency and high precision in large-scale scenes

ANY PROFILE

Product Introduction

Algorithms

- vSLAM
- Optical Calibration
- Low Latency Rendering
- Self Tracking Controller
- Cloud Map
- RGB VST
- Gesture Freedom

Coprocessors

- The 1st Gen.Interactive Coprocessors (SLAM)
- The 2nd Gen.Interactive Coprocessors(Fully Interactives)

Modules

- vSLAM Positioning Module
- Virtual 6DoF Controller Solutions

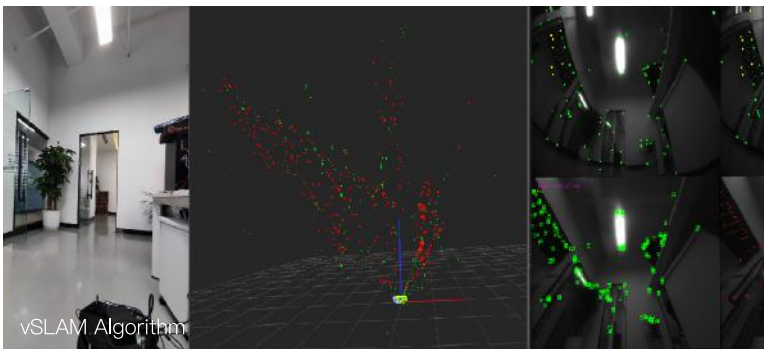
Systems

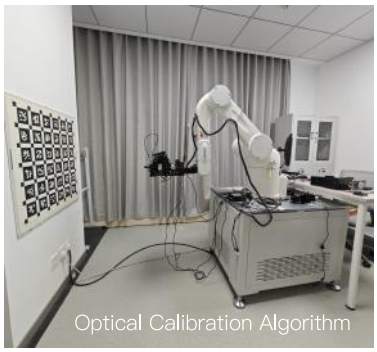
- All-in-one AR/VR Glasses
- Mesiontech Discrete Type AR/VR Solutions
- Wireless AR/VR Solution
- Virtual 6DoF Controller Solutions

Core Algorithm

1 vSLAM Algorithm

- 0 Latency: <1ms
- High-accuracy: Millimeter Level





2 Optical Calibration Algorithm

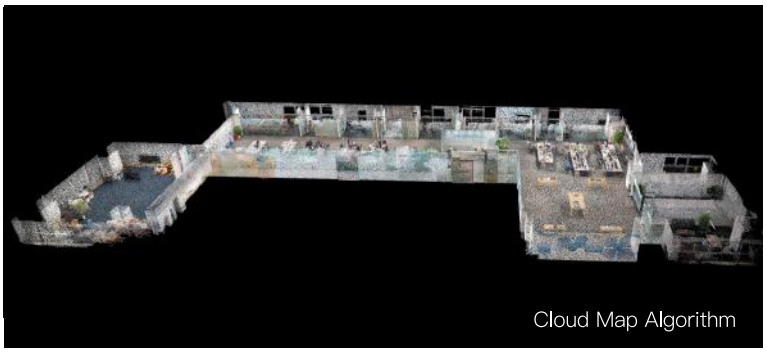
- Automatic Calibration Process
- Various Sensors Including Optical Display Integration Calibration

3 Low Latency Rendering Algorithm

- High-accuracy Positioning Prediction
- IMU Latency Compensation
- Correcting distortion caused by rolling shutter refresh in optical displays.

4 Cloud Map Algorithm

- High-precision positioning in mega-scale scenarios, mapping algorithm, SLAM cloud & terminal integration, highly integrated.
- Multi-terminal interconnected.
- No additional computation needed on the cloud, low server resource utilization.
- Small data transmission, only need to transmit maps, no need to transmit image data.
- Smooth & seamless positioning



5 Self Tracking Controller Algorithm

- Reducing the number of cameras on device display to 2, significantly reduce the volume of the HMD, reduce the hardware and software power consumption.
- No blind spot, self tracking controller, no need to rely on device cameras.
- Strong anti-interference, not affected by infrared interference.
- Hardware complexity is low, compare to the light tracking controller, control logic is simple, no need for light tracking synchronization.

6 RGB VST

- Low latency, Low distortion

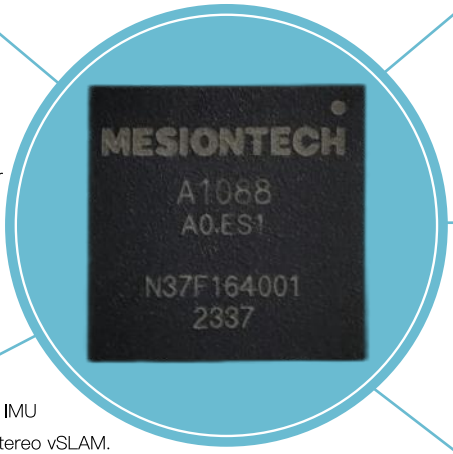
7 Gesture Freedom

- 21-joint freedom gestures with basic action recognition

The 1st Gen Coprocessors Spec

Product Positioning

- Discrete System of AR/VR Glasses Coprocessor
- Integrated AR/VR HMD Coprocessor
- Wireless AR/VR Glasses Coprocessor
- Visual 6DoF Controller Coprocessor
- Robot vSLAM Localization Coprocessor



Chip Capability

- 30 – 120FPS Feature Extraction
- 1000Hz 6DoF Pose Output
- MIPI IN、USB2.0/3.0 Device
- Latency < 1ms

Technique & Power Consumption

- 28nm Technique
- Package：FCCSP 6.5×6.5 (mm)
- SLAM Module Power Consumption～60mW
- Chip Power Consumption **100mW~170mW**

Chip Function

- Receive Data from 4 Cameras + 1 IMU
- Supports Monocular vSLAM and Stereo vSLAM.
- Provides 6DoF Pose, ORB Features, Optical Flow, and Descriptors.
- Supports Pass-through of Camera Images and IMU Data

Controllable Exposure

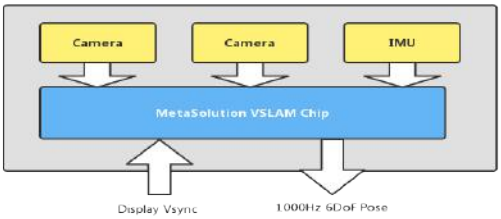
- Controlling the Camera Based on Algorithmic Demand to Reduce System Power Consumption

Typical power consumption of chips

Positioning Methods	Camera Frame Rate	IMU Frequency	Power Consumption
Stereo vSLAM	30 fps	1000 Hz	170 mW
Monocular vSLAM	30 fps	1000 Hz	130 mW
Monocular vSLAM	15 fps	1000 Hz	100 mW

vSLAM Optical Engine

Introduction



MD_FT51 Optical Engine Module is a binocular+RGB visual positioning module, by fusing 6DoFgyro data, combined with embedded processors. This module can provide indoor and outdoor visual simultaneous localization and mapping (vSLAM) as well as RGB image output. Integrated with MESIONTECH Carina SDK, this module is capable proceeding system integration, widely apply in vSLAM/VIO system and service robots fields. **It's able to substitute UWB in the indoor positioning application, concise in engineering, no additional UWB base station needed to fulfill the poisoning.**

Features

- Millimeter Positioning Accuracy Approximately 0.3 % Drifting (Loop/Cloud Map)
- USB3.0, Type-C Port, Easy to Proceeding System Integration
- Lightweight, Low Power Consumption, High Frame Rate, Low Latency
- Support OS for Android / Linux / ROS / Windows
- Customizable for Mechanical Structure and Protocol

Spec

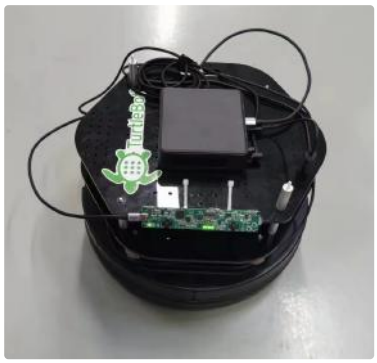
MD_FT51 Spec			
Baseline	80mm	Static Jitter	<1mm
Power Consumption	5V,<0.2A (<1W)	Repositioning Time	<1 sec
vSLAM Exposure Mode	Global	Positioning Latency	1ms
vSLAM FOV	120°	Timestamp Synchronization	In Sync with Hardware
RGB Camera Exposure Mode	Rolling	Data Transmitting	USB3.0,Type-C
RGB Resolution	2592*1944@30FPS	Power Input By	Type-C
RGB Camera FOV	D84°,H71.7°,V56.8°	Working Temperature	-10℃-50℃
IMU	6-Axis	Support OS	Android /Linux /ROS/Windows
IMU Sampling Frequency	1000Hz	Support Scenarios	Indoor/Outdoor
SLAM	6DoF	Dimension	12mm(W) × 100mm(L) × 9.43mm(H)
6DoF Frame Rate	30fps-1000fps	Weight	13.2g (included Mechanical Holder)
vSLAM Absolute Accuracy	Millimeter Positioning Accuracy Approximately 0.3 %Drifting (100 Meters Loop+CloudMap)		

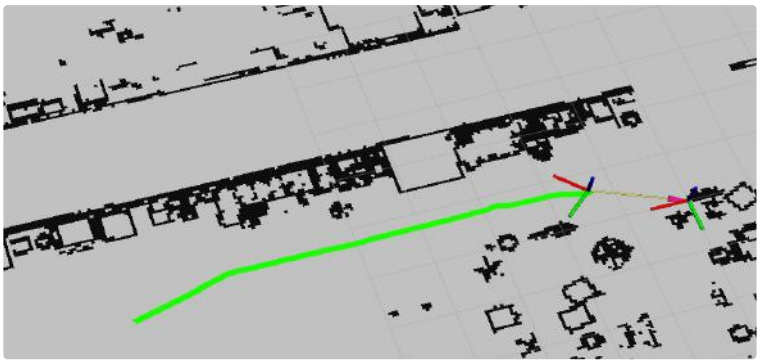
vSLAM
Optical Engine

Applications

- AR/VR Device
- Low Speed Automatic Running Trolly
- Personnel, Vehicle Positioning, Patrolling
- Service Robot
- Sweeping Robot, Mowing Robot
- Indoor/Outdoor vSLAM Applications

Example I Robot Positioning & Navigation



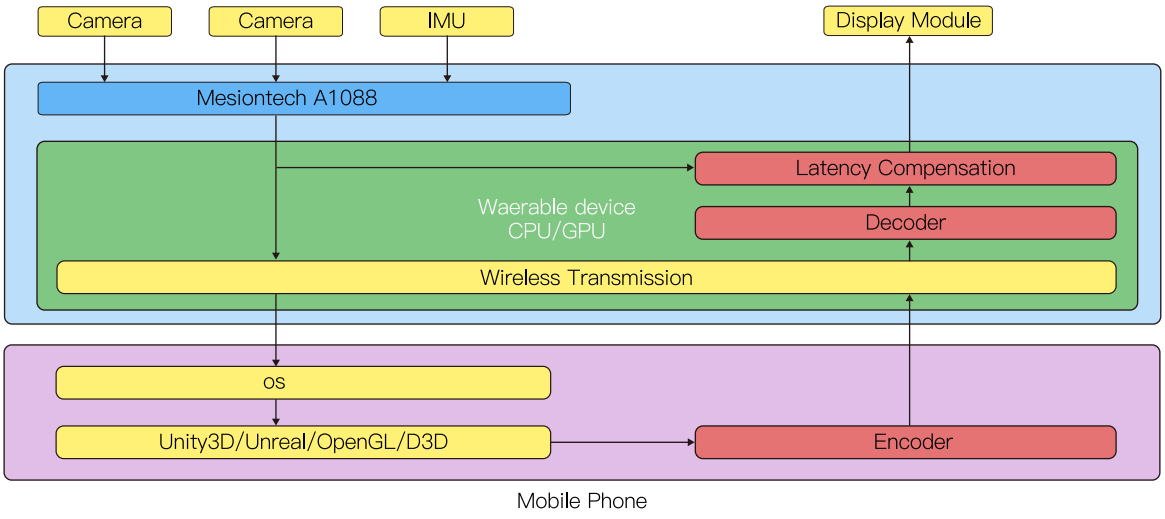


Example II Personnel, Vehicle, Indoor Positioning, Patrolling

AR Discrete Device Solution & A Reference Prototype

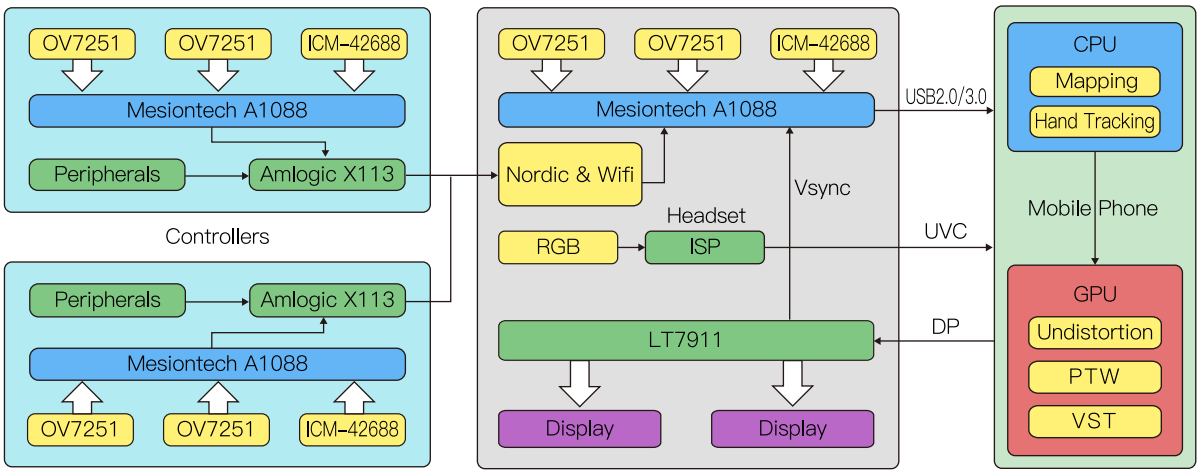
Hardware Parameters			
Chip	Qualcomm XR2	Dimension	191mm*160mm*46.5mm
Storage	8G | 128G	Weight	120g
Network	WiFi 6 | Bluetooth 5.1+LE	Display	Micro-OLED | 3840*1080
Connectivity	USB 3.0 TypeC	Optical	BB | FOV 47°
Battery	5000mAh	Positioning	Fusing both Binocular & IMU
Interactive	3DoF Beam	RGB Camera	1080P | 30HZ

Gen 1 Coprocessor Solution - Wireless AR

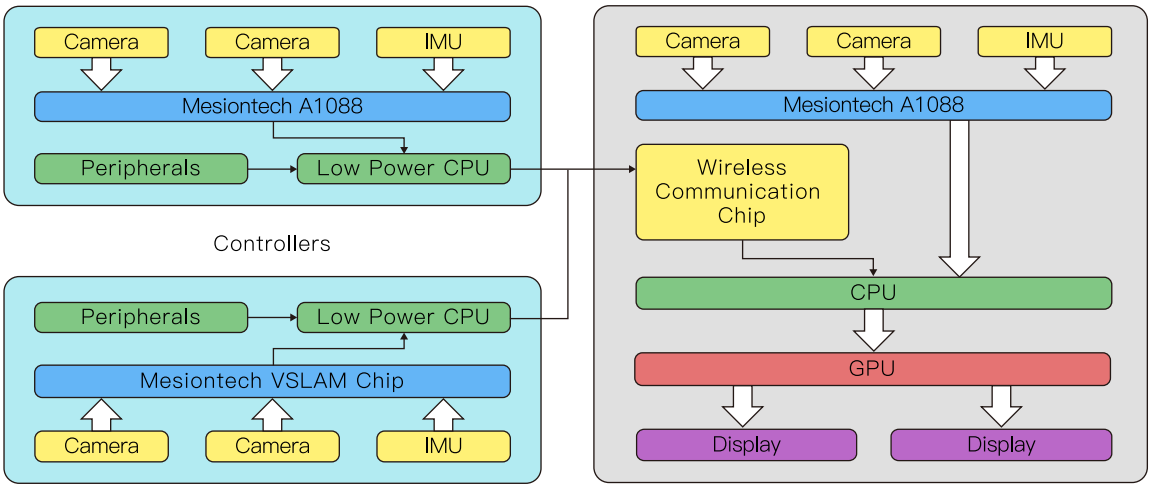


- In Combination with low-power wearable chips, benchmark against Qualcomm XR2.
- Focus on algorithm advantages to compensate for chip process disadvantages.
- Can connect wirelessly to mobile phones, as well as directly connect to PCs/Cloud Servers.

Gen 1 Coprocessor Solution - Discrete VR Solution



Gen 1 Coprocessor Solution -Visual 6DoF Controller



- Self Tracking Controller to Solve The Blind Spots.
- Reducing The Number of Camera Use.

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