AR Engine: Geometry AI as foundation of digital world

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Zou, Wenjin served as Product Executive of Huawei AR program. He initiated many innovation programs during last 20 years on smartphones, tablets, chips and OS. He worked for Intel over 10 years as chip platform product managers and lead Qualcomm’s ecosystem engineering team before joining Huawei.
1. HUAWEI AR Engine Introduction
2. HUAWEI AR Engine Functionalities
3. HUAWEI AR Engine Business Value
PART 01

HUAWEI AR Engine Introduction
Vision of HUAWEI AR Engine

Breaking Through the Boundary of Imagination and Facilitating All-Scenario Digitalization

- **Leading AR technologies:**
  HUAWEI AR Engine accurately understands the motion, environment, human body, and face to form a human-centered digital foundation.

- **Abundant application scenarios:**
  HUAWEI AR Engine provides a people-oriented full-scenario service and a basic platform for virtual-physical convergence.
AR Engine: Naturally and Accurately Integrating Digital things to Physical World seamless and imaginary way

- State of Art AR technology: AR Engine understand motion, environment, human body and face with precise geometry intelligence
- Rich use cases: AR Engine provide full digitization capability for people centric scenarios
Leading AR Platform, support 200+ millions devices

- HUAWEI AR Engine
  - Precise and Stable
    - SLAM precisely in cm
    - Real time 3D Reconstruction in mm
    - Image and 3D tracking
    - People Digitization

- App and Ecosystem
  - Life & Entertainment
    - Ecosystem: JD, Tencent Wizard together, Perfect Game

- 3D contents Vector
  - Cloud AR
    - Share, One stop solution

- Tools Reality Studio
  - 10 time efficiency
    - One stop development
    - Zero coding
    - Scenarios orientated

App and Ecosystem

- Ecosystem: JD, Tencent Wizard together, Perfect Game

1. 支持华为旗舰机，前端终端机型包括 P30 系列，Mate 20 系列，Nova 系列，荣耀系列，麦芒系列，华为平板 M6 等设备。
Richer AR feature set, State of Art AR capability

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**AR Benchmark**

- **Motion**
  - SLAM: RGB+ToF, RGB
  - Anchor: Cloud + Client

- **Environment**
  - Real time 3D Reconstruction: Y (RGB+ToF)
  - Semantic: Y
  - Image Tracking: Cloud + Client
  - 3D tracking: Cloud + Client

- **Body, Face and Hand**
  - Face AR: 4K
  - Body Skeleton: 23
  - Body Mask: Y, Real time, low power
  - Body Shape: Y
  - Hand Skeleton: Y

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**Feature**

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Mate 20 global launch event in London
HUAWEI AR Engine is an AR Engine Sculpted by HUAWEI
Architecture of HUAWEI AR Engine

HUAWEI AR Engine is the cornerstone of Huawei AR and provides precise virtual-real integration capabilities.
HUAWEI AR Engine Advantages

• Stable, Accurate SLAM and leading Capability
  - HUAWEI AR Engine integrates modules, chips, algorithms, and EMUI systems, and uses hardware acceleration to provide better AR capabilities with lower power consumption.

• Rich Capabilities:
  - Based on the unique hardware of Huawei mobile phones, Huawei mobile phones also provide interaction capabilities such as face, gesture, and body recognition, and more than 240 APIs, in addition to the basic motion tracking and environment tracking capabilities.

• Support for a hundreds of millions of devices:
  - With a large number of Huawei mobile phone users, developers can connect HUAWEI AR Engine to various Huawei mobile phones and support more than most main stream Huawei phones and tablets.
• Typical application scenarios: AR photographing, AR shopping, AR game, AR education, AR search, and AR display.
PART 02

HUAWEI AR Engine Functionalities
HUAWEI AR Engine: Leading SLAM capabilities

- Light estimation: Enables the phone to estimate the lighting conditions of the surrounding environment. Currently, this feature only supports the estimation of ambient light intensity.
- Hit testing: Enables you to select points of interest in real-life environments through your phone screen.
- Motion tracking: Continuously and stably tracks changes in the position and posture of the mobile phone, and simultaneously outputs three-dimensional coordinate information relative to the surrounding environment.
- Plane detection: Enables the phone to detect the size and position of horizontal and vertical planes (such as ground and walls).
HUAWEI AR Engine: Leading body digitization

- **Human body pose recognition**: Identifies specific human body postures.
- **Human body skeleton tracking**: Identifies and tracks the positions and postures of 23 human body skeleton points to form a human skeleton diagram. This function supports single persons and multiple persons.
- **Hand gesture recognition**: Recognizes specific hand gestures and actions.
HUAWEI AR Engine: Leading Face AR capabilities

- Facial expression tracking: Real-time calculation of the parameter values corresponding to each expression of the face can be used to directly control the expression of the avatar.
- Face mesh: The Mesh model data of the face is calculated in real time, and the Mesh model data follows the face change and motion in real time.
PART 03

HUAWEI AR Engine Business Value
HUAWEI AR Engine Enhances Game Interaction

- The World of Magic
- Billiards
- Battlefield game
HUAWEI AR Engine Improves the Way Of Obtaining Information

- AR measurement
- AR walking navigation
- AR-aided design
- AR-aided construction
Huawei AR Engine: Simple API, Rich function, Easy to Integrate & Port
HUAWEI AR Engine Improves Shopping Experience

- Size matching
- Color matching
- Improved trial usage efficiency
- Higher purchase rate
- Reduced return rate

**Furniture shopping:** Improves shopping experience by putting furniture in actual use scenarios to see if the product size, color, and style are satisfactory. Leading e-commerce player JD integrated AR Engine.
AR Engine Case Study: JD AR Show, Improving Ordering Ratio

Leading Technology
- Accurate, Stable & Natural
- Fast Plane Detection
- Easy to integrate

Business Values
- DAU: > 1,000,000 AR user
- Time On Page: 70%+
- Ordering Ratio: 40%+ (Makeup), 25% (3C)
Cool Leading Games powered by Huawei AR Engine

Wizard together: AR photo

YuMeng, AR Photo

Swan, Avatar, AR photo

SLAM

SLAM

FaceAR
AR Games: Natural Interactions

- Body motion tracking
- Face expression tracking
- Hand motion tracking

Game examples: Dream of Swans, Mini World
AR Ads with Volvo, powered by AR Engine
车高 1437 MM
车宽 1850 MM
轴距 2872 MM
车长 4761.3 MM
THANK YOU