

# HONOR View20 Technology Upgrade Backgrounder

## **From just a phone, to an advanced gaming platform**

When the first smartphones were launched, technological capabilities limited how they could be used. Smartphone users had all the basic functions, but for gamers, these devices were not to be taken seriously.

In the years since, much has changed. Today's smartphones bring processing power and display screens which are attracting an entire new generation of gamers. HONOR has always sought to meet the needs of young people around the world – consumers who value gaming and entertainment. These smartphone users are growing in number, and growing in expectations. To meet and exceed their demands, HONOR has taken enormous strides forward. With the latest flagship smartphone, HONOR View20, HONOR partnered with Fortnite to offer the game at 60 fps. Powered by Kirin 980, the world's first 7nm process smartphone SoC chipsets, HONOR View20 is the perfect platform for gaming.

As smartphones evolved over time, so did smartphone cameras and the chipsets that powered them. More and more consumers began to expect that their smartphone be able to shoot elite photos and videos – replacing their standalone digital cameras. Eventually, they began to expect them to replace screens for movies, TV, and video games, as well.

However, in the competitive smartphone industry, producing the world's leading flagship phones cannot be done with elite hardware alone. This is why HONOR is also constantly pushing the envelope for what can be achieved through innovative software. With the revolutionary Gaming+, HONOR significantly increased the performance, graphics quality and image definition of mobile games on HONOR View20.

## **A. Gaming+ Technology**

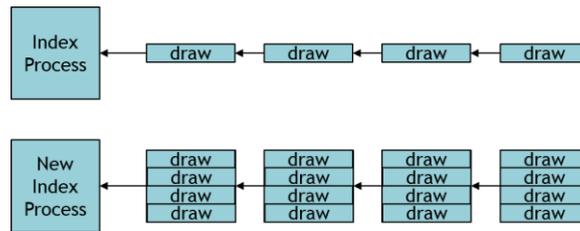
HONOR's new Gaming+ improves the gaming experience by upgrading the overall system with GPU efficiency upgrade, GPU load optimization, high definition and AI loading prediction technology, improving SOC energy efficiency by 20.34%<sup>1</sup>. The new technology improves the overall GPU efficiency, bringing consumers a faster speed, clearer image and higher definition.

## **GPU efficiency upgrade and optimization**

The upgraded driver for the Mali-G76 GPU chipset includes transform optimization, which enhances job scheduling and parallel computing to achieve greater efficiency. This reduces duplicate instructions and GPU overdraws, as well as increases the data transfer speed between CPU, GPU and memory.

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<sup>1</sup> Tested in 60fps Vulkan games in HONOR lab

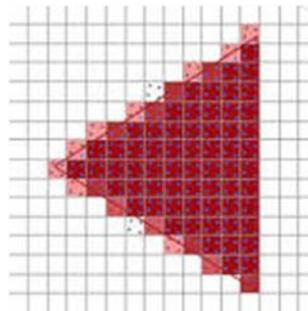


### AI loading prediction

Additionally, GPU works seamlessly with the innovative AI frequency modulation scheduling technology to predict task loads by monitoring frame rate per second (fps), image quality and touchscreen inputs in real time, and intelligently identifies performance bottlenecks. This technology is able to learn over 1,000,000 frames of data related to power consumption, based on which an accurate modelling system is established to optimize battery usage. For gaming, the new AI technology improves the load prediction accuracy of each frame by more than 30% compared to traditional methods.

### High Definition

GPU optimization enhances anti-aliasing and anisotropic filtering and reduces power consumption, providing more vivid, detailed and clear images and longer battery life. The upgrade is able to provide more details in complicated backgrounds and smoother edges for the gaming characters, taking the mobile gaming experience on HONOR View20 to the next level. The high definition capability is able to achieve better contrast, higher brightness levels and a wider color palette.



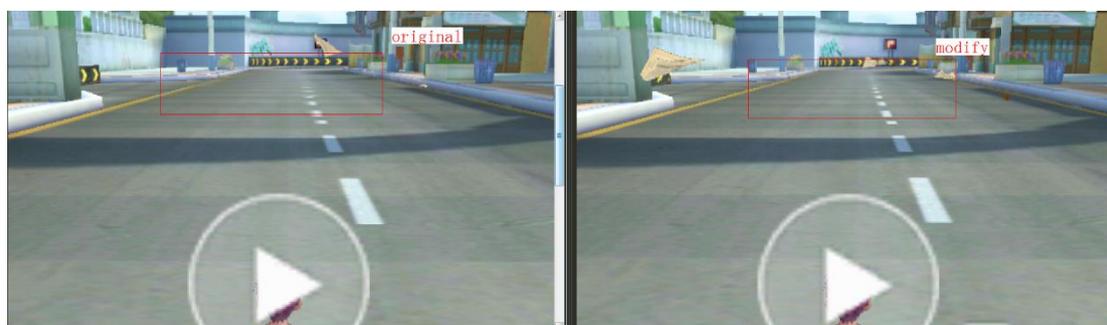
Anti- aliasing

## Premium gaming experience

With the upgrade, Fortnite Vulkan version can also be supported on the HONOR View20, bringing gamers a faster and smoother experience. Popular mobile games such as QQ Speed, Arena of Valor or Honour of Kings have been optimized to support the high definition feature. More details will be seen in distant areas while playing QQ Speed, while the characters in Honour of Kings will have smoother edges.



Comparison between original (left) and modified (right) in Honour of Kings



Comparison between original (left) and modified (right) in QQ Speed

## B. 3D TOF Camera

HONOR smartphone designers believe 3D is the trend of future tech innovation, and that mobile phones are the best platform for it. That is how the HONOR View20 came into being, as a daring exploration into this field.

HONOR View20 has included a TOF (Time of Flight) 3D sensor in its rear camera system. With the added depth sensing, skeletal tracking, and real-time motion capturing capabilities enabled by this new sensor, HONOR View20 prides itself as a remarkably slim-bodied 3D transformer with functions like 3D Motion-Controlled Gaming, 3D Shaping, and Magic AR.

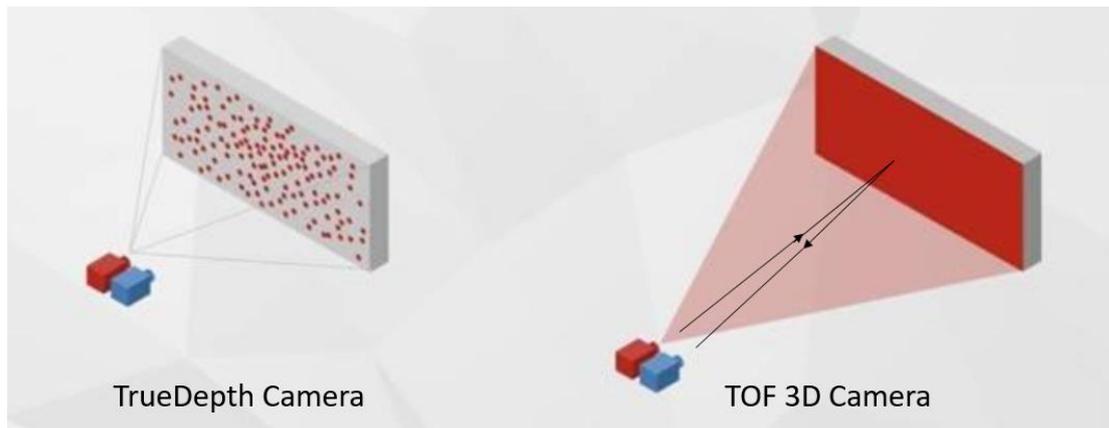
### TOF 3D technology

Before going into TOF 3D, let's take a brief look at 3D structured light technology, another important step in 3D imagery.

3D structured light technology became better known to the general public thanks to its application on the iPhone X, whose TrueDepth camera uses a dot projector to send out a

large number of light dots and then reads the pattern as they reach the target surface, forming a structural diagram.

The operating principle of TOF 3D is different. As the name "time of flight" suggests, it measures the time it takes light to travel from the sensor to the target and return, and then calculates the distance in-between using that time and the speed of light (a constant). So when plenty of light is emitted to reach almost every point on the surface of the target, all dots can be connected to create a 3D image.



HONOR View20 designers chose TOF 3D over structured light for the following reasons:

- The "surface light" transmitted by TOF 3D is highly sustainable over a long distance, so its working range is far greater than the TrueDepth camera.
- The TOF 3D sensor supports a higher frame rate and is therefore more powerful in real-time performance. It is ideal for capturing movement in 3D motion-controlled gaming.
- TOF is more adaptable to the environment.

HONOR View20 is one of the best smartphones with 3D imaging TOF lens. It can perform 30 fps real-time sensing, 240\*180 high resolution and a distance error that is less than 1%<sup>2</sup>. At the hardware level, it is enhanced by the powerful Kirin 980 processor, which grants HONOR View20 with a customized-DSP that improves image recognition speed by 50% and decreases power consumption by 50%. Moreover, the real-time skeletal recognition function guarantees a spatial position accuracy that is less than 2cm.

With all these fundamentals combined together, HONOR View20 can provide consumer with a myriad of 3D functions.

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<sup>2</sup> Tested in HONOR AR Lab

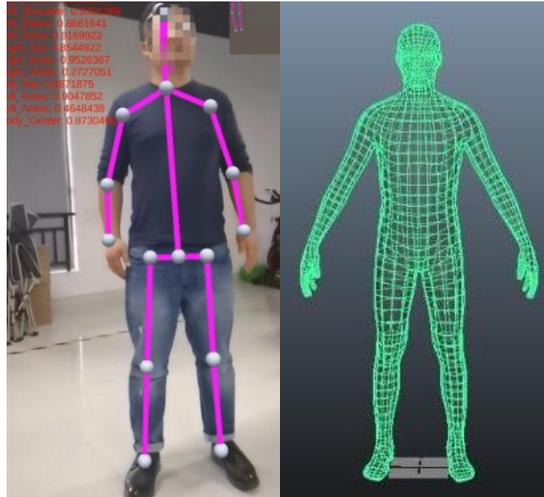


### 3D Motion-Controlled Gaming

Motion gaming offers more fun and immersion, but was not possible without a gaming console. This now changes with the release of the HONOR View20. Simply connect the phone to a large screen using a dock and a cable, then place the phone so its camera can frame you properly to capture your body information, and you're set to go!



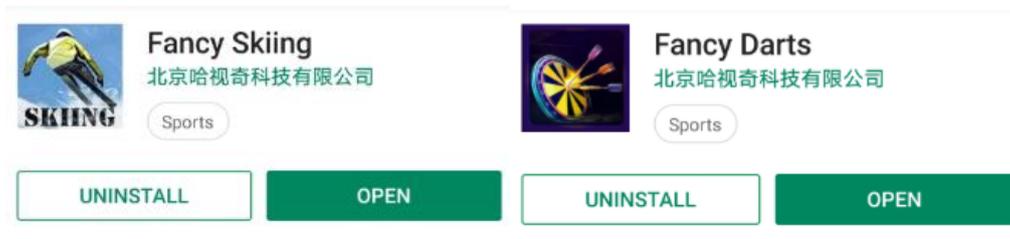
While setting it up sounds easy, its R&D was not. To ensure that the character in the game can follow the player's movements accurately, the HONOR View20 developers wrote a skeletal tracking algorithm based on the TOF Camera's high-precision body contours data, which can identify the real-time location of 15 human joints and calculate the length of bones with an accuracy down to the centimeter level. Then HONOR View20 can obtain the spatial position of different parts of your body, and track their movements and gestures in real time. In a Fancy Skiing game, for instance, your arm movements, body swings, and jumps will be accurately identified and transferred onto the screen.



In addition, optimizations such as motion smoothing and motion blur / jitter noise removal further enhance the gaming experience.

All the computing is expertly handled by the world's first 7nm AI chipset, Kirin 980, which comes equipped with the HONOR View20.

Two games were supported at launch, Fancy Skiing and Fancy Darts, and Brave Jelly is the latest motion-controlled game added to the family with more coming in the future. We can't wait to see where the future will take us. HONOR is creating a whole new ecosystem of 3D TOF, collaborating with third parties to develop more 3D TOF games and applications that make use of this groundbreaking technology.



### **Magic AR**

Magic AR is another way the HONOR View20 brings together the real and virtual worlds. In this application, there is a function called AR dance, which adopts the same motion detection principle as 3D motion gaming. AR Dance also incorporates, as its name states, 3D AR algorithms supported by the Kirin 980. They can project a virtual character "next to" you and control it to follow your actions.



Download Magic AR on Google Play Store or AppGallery now and dance with your favourite character!

### **3D Shaping**

In addition to skeletal tracking and real-time motion capturing, the TOF 3D sensor's depth sensing capability also supports 3D Shaping. 3D Shaping is a new feature that reshapes your figure while generating no background distortion, owing to the depth information from the powerful TOF 3D sensor that can accurately separate the subject and the background.

### **AI Calorie Counting**

As people become more aware of the importance of healthy living, they're more closely following how many calories they consume a day. However, calorie information is usually available only on food packaging, so how can we obtain the data when we eat freshly made meals?

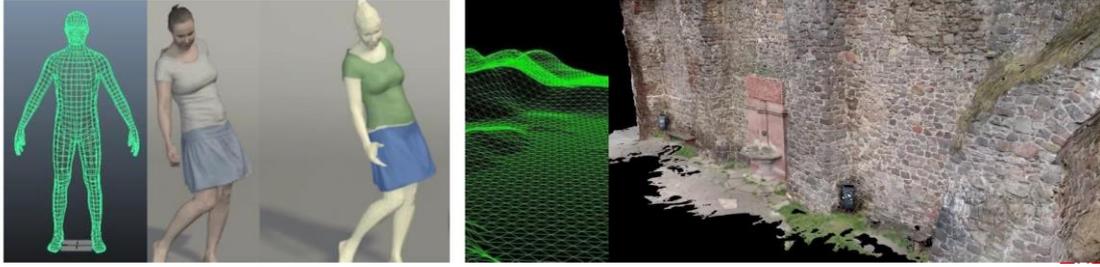
AI Calorie Counting was developed for this purpose.

Just open the camera, touch the upper left icon and select **Identify**, point your lens at the food, and you'll see the data displayed on the screen.

There you'll find not only the calorie count per 100g, but also the volume of the plate of dish you're about to eat and the exact calorie it carries. For example, the HONOR View20 can distinguish a large apple from a smaller one and tell you the calorie count of each, without you having to weigh them before the calculation.

Sounds magical, right? It is actually again achieved by the TOF 3D sensor and the Kirin 980 AI processor, as well as the 48MP main sensor. The three respectively obtain the food volume, food type, and the exact shape and appearance, which are then used for calculations.

### **The Future of TOF 3D Technology**



The HONOR View20 is just starting to tap into the enormous potential of TOF 3D. More complex, advanced 3D applications will be gradually brought to life on mobile phones, such as 3D modeling and shopping etc.

The prowess of the processor will be one of the most important factors that fuel the coming 3D technologies. It is the reason why HONOR View20 equips Kirin 980, which has been most credited for its excellent computing power and AI learning capabilities.

HONOR View20 is at the forefront of 3D technology – and it refuses to relinquish its leading position. HONOR continues to find ways to enhance 3D capabilities and hit higher and higher levels of performance.

HONOR will continue to explore cutting-edge innovation, be it 3D or AR, VR, MR, and to offer more premium user experience for all those who are young at heart. The race into the 3D future has only just begun.