

# **The Machine Vision Company**


## **Accelerating Industry 4.0 in The Bearing Industry**

Hangzhou DeepVision Technology Co., Ltd. (hereafter shorted as DeepVision), is a high technology company able to integrate various frontier technologies including machine vision, computer image processing, artificial intelligence and so on.

The company can independently develop intelligent CCD and AI camera, research into image acquisition based on FPGA platform, manufacture automated equipment, and provide software and hardware for image pre-processing and feature identification.

Since the establishment of the company, DeepVision has provided Turnkey machine vision solutions and inspection equipment to world leading bearing manufacturers, such as NSK, Schaeffler and Nachi, helping them to improve defect visual inspection, improve product quality and reduce labor cost. With many success stories, the company has been recognized by the customers and investors as a revolutionary company actively driving the advancement of the AI automatic visual inspection in global industrial sectors.

On 10 September 2018, Qualcomm and Sequoia China invested 500,000 USD in DeepVision. On 12 October 2020, DeepVision announced that it had acquired Pre-A round financing of nearly 50 million RMB led by Vertex Ventures and followed by Qualcomm.



Why can DeepVision quickly draw great attention from these world-famous investment companies? Why can DeepVision support the leading bearing companies to resolve the challenging issues which many others cannot? What are their competitive advantages and what are the true values they can bring to the Customers? What is DeepVision's company vision and where is the company heading to in the coming years? With this series of questions, Bearing News interviewed the founder, Mr. Shuailin Wang to unveil the success stories behind.







*Shuailin Wang*  
*Founder at Hangzhou DeepVision Technology*



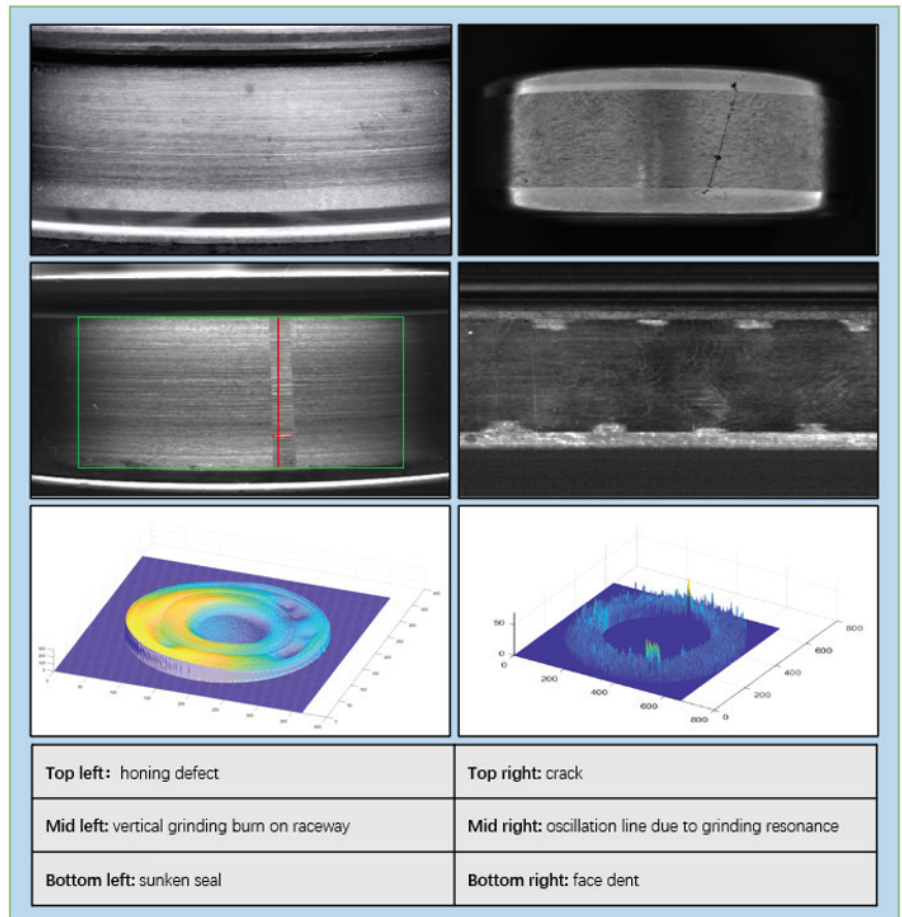
## Can you please briefly introduce the history and evolution of DeepVision?

Hangzhou DeepVision was registered a few years ago. But before that, our sister company Beijing DeepVision had already run a big number of projects with bearing and bearing component companies, who were seeking machine vision solutions on automatic defect visual inspection. After successfully conquering a series of challenges and difficulties together with these customers in the bearing field, we became assured that we can work to satisfy various kinds of challenging machine vision requirements from customers in bearing industry. With such confidence and also the strong belief that there exists huge demand of machine vision solutions from the sectors of bearing and automotive components in the coming years, we came to the decision to establish a new company in Hangzhou sitting closer to the Customers and be very much focused on these industrial sectors mentioned,

Till now, we have succeeded in developing various kinds of solutions targeting high precision and high-speed automatic vision inspection. We have now more than 50 customers operating in the sectors of bearings, automotive components, aerospace components, new sources of energy, textile and 3C electronics and so on. So far, we have already signed and executed contracts with many leading players in various sectors.



In the field of the bearing industry, we are providing machine vision solutions to detect various kinds of defects on finished bearings, rings, rollers, shields and so on. NSK, Schaeffler, NACHI and large Chinese bearing companies in China have already



purchased equipment and services from us. Furthermore, the commercial and technical discussions are ongoing with other leading bearing companies, such as SKF, Timken and Koyo.

## What are the products and solutions DeepVision can provide to the bearing industry?

For bearing industry, our mature solutions include but not limited to:

- BC series intelligent surface visual inspection machines for finished bearings
- BTO/BTI series intelligent surface visual inspection machines for bearing rings
- BG series intelligent surface visual inspection machines for rollers
- RR series intelligent surface visual inspection machines for rocker arm bearings
- CV series modular visual inspection machines for single station



In addition, we are in the process of developing BN series intelligent surface visual inspection machines for bearing needles. We are scheduling to launch BN series products to the market within 6 – 12 months.

Taking finished bearing as an example, the types of defects we can inspect are grinding burns, dents, scratches, rusty spots, cracks, turning marks, sunken shields, missing/extra/

overlapped characters, and dark spots between characters and so on.

Currently, most visual inspection solution companies in bearing and automotive components sectors are automation integration companies. Unfortunately, among them, there are very few companies specialized in R&D on visual inspection technology. This situation gives the great opportunity to DeepVision, who can utilize its know-how and expertise to fill in the gap.

Our technology roadmap has essential distinction from most others' - DeepVision has R&D capability with a full technology chain that covers:

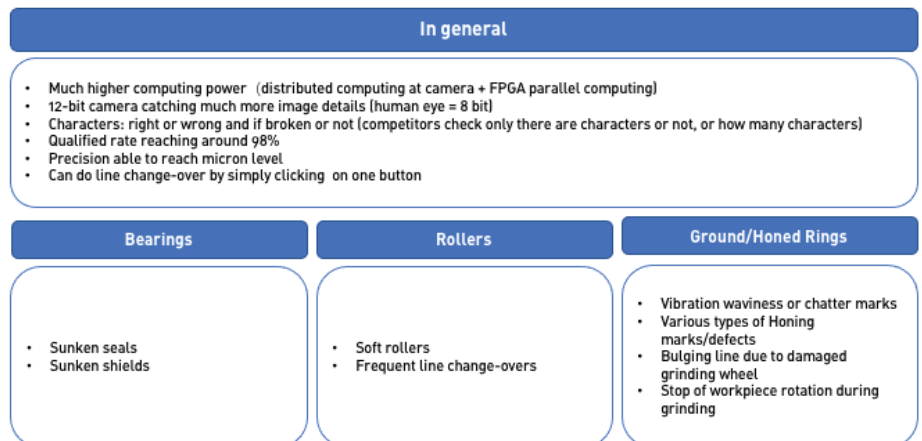
- Smart camera development and design;
- Edge computing;
- Image algorithm;
- Design of light field and light path;
- AI algorithm;
- Design of automatic equipment;
- Also some other core technical competences.

All of these enable us to achieve higher inspection efficiency and higher one-time pass rate, and consequently lower false detection rate and lower miss-detection rate.

Our competitive advantages are also reflected on a completely new technological structure, which is applying



## DeepVision's superior advantages – automatic visual defect inspection



distributed computing with partial computation situating at the camera. This replaces the traditional model of centralized data processing done by centralized industrial PC. As a result, DeepVision can achieve higher precision, higher speed and higher accuracy.

While many other labs are conducting theoretical research, DeepVision has achieved defect coverage rate of above 99%, and qualified rate of about 98%, thanks to repetitive experiments and verifications on the front lines together with the bearing and bearing component companies. In addition, our measurement precision has reached micron level.

### With these technological advancements you have achieved, what values can DeepVision contribute to the customers in the bearing industry?

Mainly in the following four areas:

- Improve the quality of the bearing products leaving the manufacturing sites, reduce the number of customer complaints, improve the end customers' satisfaction, improve the image of the bearing and bearing component companies, and help DeepVision's customers to win more orders and gain more market shares.
- Reduce the cost of inspection. Each visual inspection machine can replace at least 3-5 online inspectors, and customers can recover the investment on each machine within 1-3 years.

- The bearing and bearing component companies are in better position to control, trace and feedback the data in the manufacturing processes. With this upgraded visual data collection, the Customer can practically realize the true online diagnosis and online feedback. It is indeed a breakthrough in terms of product quality statistic control on each production batch.
- Certainly, also ease the challenges of labor shortage most companies in China are generally facing today.

### How will DeepVision develop further towards the customer market in bearing industry?

Our DeepVision's development planning has been based on:

- The environment and the trend of the speedy development of AI and digitalization in the world and the worsening labor shortages in China's manufacturing industries.
- The growing domestic and global market demand on machine vision solutions.
- The judgement of our strengths and weaknesses from comprehensive, deep and detailed analysis and benchmarking with all major players in the same field.

While we are growing the company and our research, sales and manufacturing teams, we are benchmarking with the most well-known machine vision companies in the world, and continuously taking actions





to improve and strengthen our company's management system, quality system and supply chain management system.

We foresee our sale volume will be doubled year on year over the next few years. The growth will come not only from the bearing and bearing component companies in China, but also those in the international market. Therefore, we are already in proactive contact with leading bearing companies outside China. And it is indeed our great pleasure to receive the interview from Bearing News, so that more global customers will get to know much more about us. We look forward to receiving business and technical inquiries from them, and we are eager to grow business together with them and help them to solve practical issues at their manufacturing locations.

Now, we are extremely busy in deliveries. For meeting the foreseen growing demand, we must speed up the development of manufacturing capacity. The growing capacity shall partly come from our mature and high-performing equipment suppliers, and partly from expanding our in-house capacity by constructing a new manufacturing site in Hangzhou, which is under preparation and scheduled to start production in 2021. Combining all the existing and new capacities, we should be able to have enough capacity to catch up with the fast demand increase in the coming years.

In the area of R&D, we have now an extraordinarily strong R&D team

with independent research and development capability, and we have the most advanced core technologies domestically and globally. But we are keeping reminding ourselves that we should never be satisfied with what

we have achieved today, but instead continue to innovate to keep our leading technological position in the market.

Our team believes DeepVision has a very bright and broad future in the global bearing industry. While seizing the business opportunities, developing new technologies and growing further and further, DeepVision team must apply management knowledge, skills, and tools to construct and maintain a healthy and robust management system, which should be the foundation for our growth ahead.

We highly appreciate this interview from Bearing News. And we look forward to hearing soon from more and more domestic and global bearing and bearing component customers!

*Please visit our website on [www.deepvision-tech.com](http://www.deepvision-tech.com) or send inquiries to [info@deepvision-tech.com](mailto:info@deepvision-tech.com)*

