

一、先临三维公司简介 SHINING 3D Company Profile

先临三维科技股份有限公司成立于 2004 年，是三维视觉领域国家级制造业单项冠军、国家专精特新重点“小巨人”企业。公司专注于高精度三维视觉软、硬件的研发和应用，致力于成为具有全球影响力的三维视觉技术企业，推动高精度三维视觉技术的普及应用。公司总部设于杭州，在成都、天津、中国香港，德国斯图加特，美国加利福尼亚州、佛罗里达州，日本东京等地设有子公司。

SHINING 3D Tech Co., Ltd. was founded in 2004. It is a national-level manufacturing single champion and a key national "Little Giant" enterprise in the field of 3D vision. The company specializes in the R&D and application of high-precision 3D vision software and hardware, and is committed to becoming a globally influential 3D vision technology enterprise, promoting the widespread application of high-precision 3D vision technology. Headquartered in Hangzhou, the company has subsidiaries in Chengdu, Tianjin, Hong Kong SAR of China, Stuttgart (Germany), California and Florida (the United States), Tokyo (Japan), and other locations.

先临三维的高精度三维视觉技术深度应用于高精度工业 3D 扫描（3D 数据建模、三维视觉测量与检测）和齿科数字化，2025 年先临三维营业收入超 15 亿元，公司产品已经销往全球 100+ 个国家和地区，国际业务占比约 70%。

SHINING 3D 's high-precision 3D vision technologies are deeply applied in high-precision industrial 3D scanning (including 3D data modeling, 3D vision measurement and inspection) and digital dentistry. In 2025, the company' s operating revenue exceeded RMB 1.5 billion. Its products have been sold to more than 100 countries and regions worldwide, with international business accounting for approximately 70% of total revenue.

高精度工业 3D 扫描业务，为汽车工业、民用航空、能源重工、工程机械、电子电器、艺术

文博、精准医疗、教育科研等行业提供工业 3D 光学测量与 3D 设计应用等高精度 3D 数字化解决方案，主要产品包括无线一体式手持 3D 扫描仪、双光源手持 3D 扫描仪、手持式激光三维扫描仪、跟踪式激光三维扫描系统、固定式蓝光三维扫描仪、机器人智能三维检测系统以及专业彩色三维扫描仪等，覆盖 3D 全尺寸检测、三维设计建模、数据存档、可视化交互等应用场景。

The Company' s high-precision industrial 3D scanning business provides high-precision 3D digital solutions including industrial 3D optical measurement and 3D design applications for industries such as automotive, civil aviation, energy and heavy industry, construction machinery, electronics and electrical appliances, art and cultural heritage, precision medicine, education and scientific research.

Its core product portfolio consists of wireless all-in-one handheld 3D scanners, dual-light source handheld 3D scanners, handheld laser 3D scanners, tracker-integrated laser 3D scanning systems, fixed blue-light 3D scanners, robotic intelligent 3D inspection systems, and professional color 3D scanners. These products are widely applied in scenarios including full-scale 3D inspection, 3D design and modeling, data archiving, and visual interaction.

齿科数字化业务，为口腔诊所、医院、义齿工厂等口腔机构提供可视化接诊及治疗(修复、正畸、种植等)数字化解决方案，包括云舒植数字化种植导板解决方案、云舒皓数字化美学解决方案、All-digital Lab 全数字化产线方案等。主要产品为齿科 IPG 口内摄影测量系统、牙颌重建系统、口内 3D 扫描仪、面部 3D 扫描仪、桌面 3D 扫描仪、桌面高精度 3D 打印机和配套设计、诊疗应用软件。

The Company' s digital dentistry division delivers digital solutions for visual diagnosis and treatment (restoration, orthodontics, implantology, etc.) to dental institutions including dental clinics, hospitals, and dental laboratories. Featured solutions include the CloudShuZhi

digital implant guide system, CloudShuHao digital aesthetic solution, and the All-digital Lab fully digital workflow solution.

Core products encompass the dental IPG intraoral photogrammetry system, dental arch reconstruction system, intraoral 3D scanner, facial 3D scanner, desktop 3D scanner, desktop high-precision 3D printer, as well as supporting design and clinical application software.

公司拥有研发人员 500 多名，约占总人数的 40%，其中硕博研发人才约占 50%，建有国家级博士后工作站、浙江省重点企业研究院，与浙江省质量科学研究院共建有“全省数字精密测量技术研究重点实验室”，与浙江大学、北京大学口腔医学院、四川大学华西口腔医学院等高校开展科研合作。

The Company employs more than 500 R&D personnel, accounting for approximately 40% of its total workforce, among which about 50% hold master's or doctoral degrees. It operates a national-level postdoctoral research station and a key enterprise research institute of Zhejiang Province. The Company has jointly established the Provincial Key Laboratory of Digital Precision Measurement Technology with the Zhejiang Institute of Quality Science. Furthermore, it maintains research collaborations with leading universities including Zhejiang University, Peking University School of Stomatology, and West China School of Stomatology, Sichuan University.

二、成图大赛国际赛道

International Track of the Graphics Competition

全国大学生先进成图技术与产品信息建模创新大赛是图学类课程最高级别的国家级赛事，被誉为“图学界的奥林匹克”。2026 年第十九届“高教杯”全国大学生先进成图技术与产品信息建模

创新大赛（以下简称“成图大赛”）特设国际赛道，旨在促进国际交流与产学研用融合，为全球学子提供展示平台。

The National College Student Innovation Competition for Advanced Graphics Technology and Product Information Modeling is the top-level national competition in graphics-related disciplines, known as the “Olympics of Graphics” .

The 19th “Higher Education Cup” National College Student Innovation Competition for Advanced Graphics Technology and Product Information Modeling (hereinafter referred to as the “Graphics Competition”) in 2026 will feature a specially established international track, designed to promote international exchange and the integration of industry, university, research and application, and provide a global display platform for students worldwide.

1、比赛内容: Competition Content

国际赛道是面向全球高校学生设立的综合创新竞赛平台，包含三个分赛道：

The International Track is a comprehensive innovation competition platform open to university students worldwide, consisting of three sub-tracks.

1) 逆向工程与创新设计 Reverse Engineering & Innovative Design

2) 高精度 3D 视觉数字化测量与建模（由先临三维提供技术支持）

High-Precision 3D Vision Digital Measurement and Modeling(Technically Supported by Shining 3D)

此赛道共 3 个任务，聚焦三维扫描技术的应用，参赛者需完成从三维扫描、逆向建模到检测的全流程任务。任务一：零件三维数据采集。选手根据现场提供的实物零件，使用扫描仪获取完整的零件

点云数据。任务二：零件逆向建模。根据提供的扫描数据和实物零件，使用逆向设计软件完成零件的逆向建模工作。任务三：零件尺寸检测。根据提供的扫描数据和数模，按照测量要求，使用三维检测软件完成两个零件的尺寸检测工作，最终输出检测报告。

This track consists of three tasks focusing on the application of 3D scanning technology. Participants are required to complete the full workflow from 3D scanning and reverse engineering to dimensional inspection.

Task 1: 3D Data Acquisition of Parts Based on the physical parts provided on-site, participants use 3D scanners to obtain complete point cloud data of the parts.

Task 2: Reverse Engineering of Parts Using the scanned data and physical parts provided, participants complete the reverse modeling of the parts via professional reverse engineering software.

Task 3: Dimensional Inspection of Parts Based on the scanned data and CAD model, participants perform dimensional inspection on two parts in accordance with the specified measurement requirements using 3D inspection software, and finally generate a formal inspection report.

3) 先进智能制造与快速成型

Advanced Intelligent Manufacturing and Rapid Prototyping

说明：团队需完整参与全部三个项目，允许选手兼报，但需注意时间不冲突。

Note: Teams must participate in all three events. Individual participants may enter multiple events, provided that no scheduling conflicts exist.

2、大学生培养价值：

先进制造工艺持续突破，推动产品设计走向复杂曲面与一体化结构，对检测技术的精度与全面性提

出更高要求。传统测量方法在应对高度复杂的自由曲面时，效率与完整度双双受限。高精度三维扫描技术以非接触、高密度的全场测量方式，快速获取工件表面完整三维数据，精准还原复杂几何特征。它为高精度、全尺寸的数字化质量检测与流程控制筑牢技术基石，为现代精密制造的发展之路铺就坚实基础，是中国制造迈向中国创造的关键支撑。将高精度三维视觉技术其融入大学生培养体系，具有非常重大的意义：

Continuous breakthroughs in advanced manufacturing processes have propelled product design toward complex curved surfaces and integrated structures, imposing more stringent requirements on the accuracy and comprehensiveness of inspection technologies. Traditional measurement approaches suffer from inherent limitations in efficiency and integrity when applied to highly sophisticated free-form surfaces. High-precision 3D scanning technology, characterized by non-contact, high-density full-field measurement, enables rapid acquisition of complete 3D data from workpiece surfaces and accurate reconstruction of complex geometric features. It establishes a robust technological foundation for high-precision, full-scale digital quality inspection and process control, underpins the development of modern precision manufacturing, and serves as a critical enabler for China's transition from Made in China to Created in China. Against this backdrop, the integration of high-precision 3D vision technology into the undergraduate education system carries profound and far-reaching significance:

- 1) 夯实专业基础，提升核心技能：比赛高度模拟真实工程场景，将先进的工业级三维扫描设备和技术引入竞赛，使学生能够接触并熟练掌握当前制造业和设计领域的前沿数字化测量与建模技术。学生通过实践操作，学习从三维扫描、点云数据处理、逆向建模及尺寸检测的完整流程，极大地提升了其数字化设计与制造的专业技能。

- 2) **激发工程思维，提升综合素养：**本赛道以高端制造与复杂产品真实的设计、检测、质量控制等需求为导向，围绕“数据采集-处理分析-决策应用”的全技术链路，考察选手运用三维扫描仪，实现从数字化计量、高效尺寸报告与数字化流程管控的核心工程能力。
- 3) **促进团队协作，增强沟通能力：**团队赛制要求队员分工协作、高效沟通，共同完成复杂任务，这将极大地锻炼学生的团队协作能力和沟通协调能力，为未来职场发展奠定坚实基础。
- 4) **提升就业竞争力，助力个人发展：**高精度 3D 视觉技术是当前制造业、汽车、航空航天、文物保护等多个行业的核心需求。掌握这一技术，意味着学生具备了将物理世界数字化的关键能力，能够完成从三维扫描、数据处理到逆向建模、创新设计的全流程任务，极大地提升了其在相关专业领域的核心竞争力。
- 5) **拓展国际视野，促进学术交流：**国际赛道汇聚了全球高校的优秀学子，为参赛者提供了宝贵的国际交流机会，有助于拓展学术视野，了解行业前沿动态，激发工程创新热情。

1) Strengthen professional foundations and enhance core competencies

The competition highly simulates real engineering scenarios by introducing advanced industrial-grade 3D scanning equipment and technologies, enabling students to access and master cutting-edge digital measurement and modeling techniques widely used in modern manufacturing and design. Through hands-on practice, students learn the complete workflow of 3D scanning, point cloud processing, reverse engineering, and dimensional inspection, significantly improving their professional skills in digital design and manufacturing.

2) Cultivate engineering thinking and enhance comprehensive capabilities

Guided by the actual demands of high-end manufacturing and complex products in design, inspection, and quality control, this track centers on the full technical chain of “data acquisition – processing and analysis – decision-making and application” . It evaluates

participants' core engineering abilities in implementing digital metrology, generating efficient dimensional reports, and managing digital workflows using 3D scanners.

3) Promote teamwork and strengthen communication skills

The team-based format requires members to divide responsibilities, collaborate closely, and communicate efficiently to accomplish complex tasks. This greatly cultivates students' teamwork, coordination, and communication skills, laying a solid foundation for their future career development.

4) Improve employment competitiveness and support personal growth

High-precision 3D vision technology is a core requirement across industries including manufacturing, automotive, aerospace, and cultural relic preservation. Mastery of this technology equips students with the key capability to digitize the physical world and complete end-to-end workflows from 3D scanning and data processing to reverse modeling and innovative design, significantly enhancing their core competitiveness in related professional fields.

5) Expand international vision and facilitate academic exchange

The international track gathers outstanding students from universities worldwide, providing valuable opportunities for global academic exchange. It helps participants broaden their academic horizons, keep abreast of cutting-edge industry trends, and inspire enthusiasm for engineering innovation.

3、总结 Conclusion

第十九届“高教杯”成图大赛国际赛道，以其紧密对接工业实际的竞赛内容，为全球大学生提供了一个锤炼工程实践能力的真实舞台。通过逆向工程、高精度 3D 视觉测量建模与先进智能制造等

具体任务，大赛不仅检验了学生对数字化设计与制造技术的掌握程度，更培养了他们解决复杂工程问题的综合能力与创新思维。这不仅是一场技能的比拼，更是一次将课堂知识转化为实际生产力的演练，为学生未来投身智能制造领域，成长为具备扎实功底与国际视野的工程人才奠定了坚实基础。

The International Track of the 19th "Higher Education Cup" Graphics Competition, with its competition content closely aligned with industrial practice, provides a genuine platform for university students worldwide to hone their engineering practical capabilities. Through specific tasks such as reverse engineering, high-precision 3D vision measurement and modeling, and advanced intelligent manufacturing, the competition not only examines students' mastery of digital design and manufacturing technologies but also fosters their comprehensive ability and innovative thinking in solving complex engineering problems. It is not only a contest of skills but also an exercise in transforming classroom knowledge into real productivity, laying a solid foundation for students to engage in the field of intelligent manufacturing in the future and grow into engineering talents with solid professional competence and an international vision.