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1. 发表论文

37.3 Q1 > Mol Cancer. 2023 Jul 1;22(1):103. doi: 10.1186/s12943-023-01811-0.

Enhancement of TKI sensitivity in lung adenocarcinoma through m6A-dependent translational repression of Wnt signaling by circ-FBXW7

Kai Li [# 1], Zi-Yang Peng [# 2], Rui Wang [# 3 4], Xiang Li [1 3], Ning Du [3], Da-Peng Liu [3], Jia Zhang [3], Yun-Feng Zhang [3], Lei Ma [5], Ye Sun [6], Shou-Ching Tang [7], Hong Ren [3], Yi-Ping Yang [8], Xin Sun [9 10]

Affiliations + expand

PMID: 37393311 PMCID: PMC10314519 DOI: 10.1186/s12943-023-01811-0

Free PMC article

Abstract

Background: Tyrosine kinase inhibitors (TKIs) that specifically target mutational points in the EGFR gene have significantly reduced suffering and provided greater relief to patients with lung adenocarcinoma (LUAD). The third-generation EGFR-TKI, Osimertinib, has been successfully employed in clinical treatments to overcome resistance to both original and acquired T790M and L858R mutational points. Nevertheless, the issue of treatment failure response has emerged as an insurmountable problem.

Methods: By employing a combination of multiple and integrated approaches, we successfully identified a distinct population within the tumor group that plays a significant role in carcinogenesis, resistance, and recurrence. Our research suggests that addressing TKI resistance may involve targeting the renewal and repopulation of stem-like cells. To investigate the underlying mechanisms, we conducted RNA Microarray and m6A Epi-Transcriptomic Microarray analyses, followed by assessment of transcription factors. Additionally, we specifically designed a tag to detect the polypeptide circRNA-AA, and its expression was confirmed through m6A regulations.

› Ann Med. 2022 Dec;54(1):921-932. doi: 10.1080/07853890.2022.2056239.

Stem signatures associating SOX2 antibody helps to define diagnosis and prognosis prediction with esophageal cancer

Zi-Yang Peng [1], Qing-Shi Wang [1], Kai Li [1], Si-Si Chen [1], Xiang Li [1 2], Guo-Dong Xiao [3], Shou-Ching Tang [4], Hong Ren [1], Zhe Wang [1], Xin Sun [1]

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PMID: 35382656 PMCID: PMC9004505 DOI: 10.1080/07853890.2022.2056239

Free PMC article

Abstract

Background: esophageal cancer is one of the deadliest diseases worldwide. Due to the ineffectual screening methods referring to early diagnosis, most people have lost their chance of radical resection when diagnosed with esophageal cancer. This aim of this study was designed to evaluate the latent values of the stem signatures-associated autoantibodies (AABS) in predicting the early diagnosis, and particularly seeking the precise predictive outcomes with sensitive SOX2. We also studied the potential immunotherapeutic targets and prospective long-term prognosis predicators of esophageal cancer.

中华肝脏外科手术学电子杂志编辑部
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CMAIC 2023中国医学人工智能大会
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Intelligent digital fogging technology shows great potential in laparoscopic hepatectomy surgery

Affiliation: School of Future Technology,National Local Joint Engineering Research Center for Precision Surgery & Regenerative Medicine,Shaanxi Provincial Center for Regenerative Medicine and Surgical Engineering Xian Jiaotong University, Xi'an City, Shaanxi Province,710061.China
Ziyang Peng, Zhibo Wang, Yongtai Ma, Dan Wang, Shuyan Liu, Feng Ma, Yu Li, Xuemin Liu, Rongqian Wu, Yi Lv

Keywords
Laparoscopic hepatectomy; digital surgery; intelligent intraoperative defogging; precision surgery; surgical safety

Background and Aims
A series of smoke, aerosols, and other gases generated during surgical hemostasis operations such as electro-knife and ultrasonic knife in laparoscopic surgery can interfere with the normal course of the surgical procedure. In this study, we aimed to utilize artificial intelligence algorithms to assist intraoperative defogging to reduce interference with the operator's field of view during surgical operations.

Original Image of Laparoscopic Surgery

METHODS
A relevant dataset was created from videos of smoke in the operating area during surgery, and several algorithms were evaluated using deep-sea experiments to assess the effectiveness and speed of each type of algorithm.

RESULTS
The intraoperative smoke persistence time of 53 patients with laparoscopic hemihepatectomy ranged from 35 to 78 min, with a median time of 59 min; the mirror was removed and wiped 23 to 44 times during the operation, with a median number of times of 35; and an average of 30 s was spent on each occasion. Intelligent-assisted image defogging time averaged 0.01 s, and the success rate of image processing was 93% (163680/ 176000). Intelligent-assisted image defogging was effective in reducing intraoperative mirror-wiping time ($Z = -3.145$, $P < 0.05$).

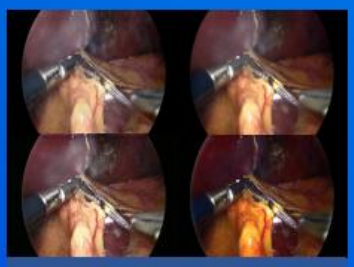

Image After Digital Dehazing Algorithm Processing

CONCLUSION
Our self-designed yun-transform algorithm showed excellent effectiveness in automating digital through-fog elimination effectively performing fog identification and removal after grading, significantly improving intraoperative smoke interference with the operator's field of view.

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Intelligent Surgery Enters the Blind Spot of Lumpectomy Liver Resection

Affiliation: School of Future Technology,National Local Joint Engineering Research Center for Precision Surgery & Regenerative Medicine,Shaanxi Provincial Center for Regenerative Medicine and Surgical Engineering Xian Jiaotong University, Xi'an City, Shaanxi Province,710061.China

Authors: Ziyang Peng, Zhibo Wang, Yan Yan, He Ba, Haoqian Peng, Yu Li, Guan Yu, Feng Ma, Xuemin Liu, Rongqian Wu, Yi Lv

Keywords
lumpectomy hemihepatectomy; intelligent intraoperative recognition; total surgical coverage; intraoperative vascular alert; personalized precision surgery

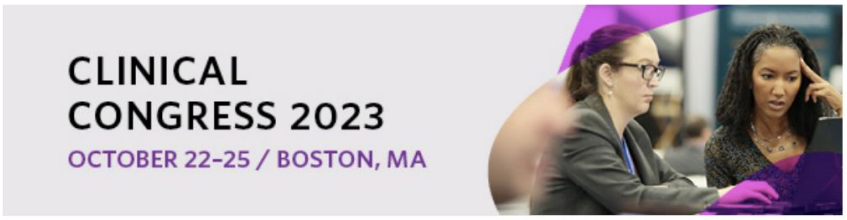
Background and Purpose
More accurate identification of anatomical structures and surgical processes is often required for planning when performing a lumpectomy of the right half of the liver. In this study, we optimized our process in laparoscopic hepatectomy by designing an intelligent surgical screen recognition software module.

Results
An intelligent surgical module can effectively perform real-time alignment of 3-D reconstruction and surgical screen during surgery by introducing a 3D reconstruction model before surgery, clarifying anatomical structures, suggesting surgical stages and alerting potential deep liver vessel locations, and providing early warning of danger zones, which effectively reduces intraoperative complications and optimizes surgical processes.It can reduce vascular and nerve injuries by 28.23% and shorten the operation time by 16.54%.

Methods
A data training set was established by multicenter data of 53 cases of laparoscopic right hemihepatectomy, and an additional 21 cases of laparoscopic right hemihepatectomy surgical videos were used as an external validation set to clarify the intraoperative organ boundaries and to do the surgical warnings, and the algorithms were evaluated by the surgical real-time video recordings videos and the real-time screen of the laparoscopic simulator.

Figure1 Matched images between original video and real-time intelligent processed diagram

Conclusion
Intelligent surgical software can be effectively used in lumpectomy for right hemihepatectomy to provide more accurate and safe surgical advice to the operator and bring better survival benefits to the patients. Laparoscopic hemihepatectomy; intelligent intraoperative recognition; total surgical coverage; intraoperative vascular alert; personalized precision surgery.



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Session: SP302-2 | e-Posters VI - Station 2: Hepatobiliary and Pancreas II
Date and Time: 10/25/2023 2:30:00 PM - 10/25/2023 4:00:00 PM Eastern Time

Authors: ZiYang Peng, MD, PhD, Zhibo Wang, PhD, Juanjuan Wang, PhD and Yi Lyu, MBBS, MS, FACS. The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China, The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an City, Shaanxi Province, Chinese mainland, China, The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China

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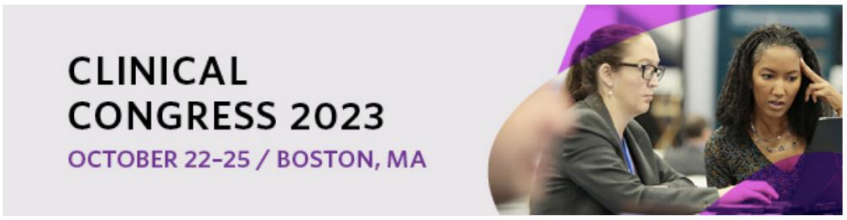

Dear ZiYang Peng:

On behalf of the American College of Surgeons' Scientific Forum Committee, the Division of Education is pleased to invite you to present your accepted abstract at Clinical Congress 2023.

Abstract: *Intelligent Surgical Confidential Assistant Helps Precise Magnetic Assisted Vascular Anastomosis*
Authors: ZiYang Peng, MD, PhD, Zhibo Wang, PhD, Juanjuan Wang, PhD and Yi Lyu, MBBS, MS, FACS. The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China, The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an City, Shaanxi Province, Chinese mainland, China, The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China

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聚焦前沿 规范提高 创新发展 合作共赢

PO 017

Prospects for intelligent surgical machine assistants in precision liver segment resection

Affiliation: School of Future Technology, National Local Joint Engineering Research Center for Precision Surgery & Regenerative Medicine, Shaanxi Provincial Center for Regenerative Medicine and Surgical Engineering Xian Jiaotong University, Xi'an City, Shaanxi Province, 710061. China
Authors: Ziyang Peng, Zhibo Wang, Yu Li, Xuemin Liu, Lyu Yi

Objective

Laparoscopic precision liver segment resection often requires accurate identification of anatomical structures and surgical procedures planned by haemodynamic zoning. In this study, we designed an intelligent surgical aid to optimize our laparoscopic liver segment resection procedure and avoid surgical complications, providing a more precise and standardized surgical treatment system for patients.

Results

The intelligent surgical machine assistant was able to rapidly import the reconstructed 3D model of the liver preoperatively, match the 3D picture with the real-time surgical picture during surgery, clarify the anatomical structure and vascular distribution of liver subsections, assess the surgical stage and the surgical instruments to be used next, alert the surgical path with key frames, and provide early warning of dangerous areas, effectively reducing intraoperative complications. The potential for lymph node detection was improved by 37.21%, vascular nerve injury was reduced by 17.16%, operative time was effectively reduced by 18.95%, postoperative patient length of stay was reduced by 15.29%, and 97% of patients reported satisfaction.

Methods

We built our dataset using a large amount of international multicenter video data of laparoscopic liver resection. The effectiveness and speed of various convolutional neural network algorithms were evaluated through deep-sea experiments. The algorithms were introduced preoperatively through a 3D reconstruction model, and the effectiveness and safety were assessed through live video of the surgery and live images from a laparoscopic simulator.

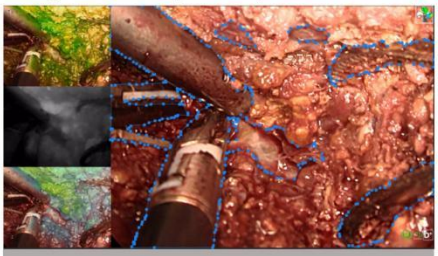

Figure1 Image segmentation pattern diagram

Conclusion

The Intelligent Surgical Machine Assistant can be safely and effectively used for laparoscopic hepatic segmental resection, significantly reducing the chance of surgical complications, providing operators with more accurate and safer surgical recommendations, and providing patients with a better postoperative recovery outcome and experience.

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PO 018

Intraoperative Image Detection and Clearing System Based on Generative Adversarial Network

Affiliation: School of Future Technology, National Local Joint Engineering Research Center for Precision Surgery & Regenerative Medicine, Shaanxi Provincial Center for Regenerative Medicine and Surgical Engineering Xian Jiaotong University, Xi'an City, Shaanxi Province, 710061. China
Authors: Ziyang Peng, Zhibo Wang, Yu Li, Xuemin Liu, Lyu Yi

Objective

During laparoscopic surgery, the thermal decomposition of human tissue generates smoke and aerosols, which can interfere with the surgical process. In this study, we aimed to develop a generative adversarial network (GAN) model to detect and clear intraoperative smoke, in order to optimize the surgical process and provide better medical services for patients.

Results

The deep learning algorithm can effectively qualify and quantify the fog generated by the image, which is divided into five levels: smoke that does not affect surgery, local smoke that causes the surgical operation area to be blurry, some smoke that causes human organ recognition to be blurry, a large amount of smoke that cannot identify the boundaries of various tissue organs, and a large amount of smoke that completely blocks the surgical field of view. The optimized algorithm can identify smoke and clear fog in 0.01 seconds. The comprehensive defogging rate in the surgical area was 91.71%, the vascular injury rate was reduced by 43.26%, and the operative time was effectively reduced by 15.34%.

Methods

We established a related dataset by collecting smoke videos produced during different stages of various surgeries from multiple international datasets, as well as a large number of surgical videos from our center, which were segmented frame by frame. We then evaluated the effectiveness and speed of various algorithms through ablation experiments, using intraoperative smoke in real-time videos and endoscope simulator images.

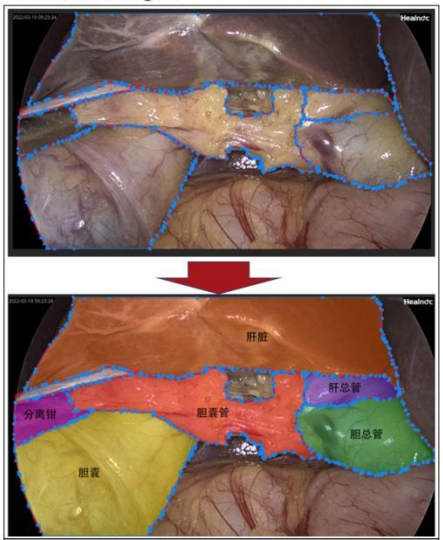

Figure 1 Artificial intelligence automatically identifies the image segmentation process of endoscopic surgery

Conclusion

The deep learning image defogging algorithm can effectively identify and remove classified fog during laparoscopic cholecystectomy, significantly reducing the interference of smoke on the surgeon's visual field.

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PO 019

Application of Orthogonal Decomposition in Surgical Image Segmentation - for Unsupervised Adaptability in Intraoperative Surgical Image Recognition Navigation

Affiliation: School of Future Technology, National Local Joint Engineering Research Center for Precision Surgery & Regenerative Medicine, Shaanxi Provincial Center for Regenerative Medicine and Surgical Engineering Xian Jiaotong University, Xi'an City, Shaanxi Province, 710061. China
Authors: Ziyang Peng, Zhibo Wang, Yu Li, Xuemin Liu, Lyu Yi

Objective

Deep learning-based medical image segmentation methods have made significant progress. However, existing data processing methods are sensitive to image distribution, so slight changes in surgical images can lead to a decrease in image recognition performance. To address this problem, this study proposes a new orthogonal decomposition adversarial domain adaptation architecture for medical image segmentation.

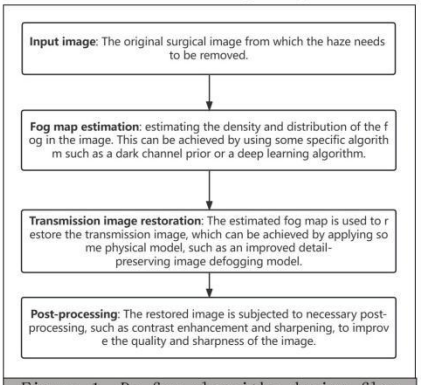

Figure 1 De-fog algorithm design flow chart

Results

In the slightly adjusted laparoscopic surgical images, our algorithm was fully validated and could effectively identify organs and surrounding blood vessels and nerves, with a detection rate 37.21% higher than that of the human eye. In the process of large-scale laparoscopic image changes, our algorithm could also effectively identify the relative positions of different organs, increasing doctor satisfaction by 47.21% and preventing adverse complications caused by surgical errors.

Methods

Comprehensive experiments were conducted on multiple international public datasets and a large amount of intraoperative surgical video content, including laparoscopic cholecystectomy segmentation dataset, laparoscopic liver cancer resection surgery segmentation dataset, and laparoscopic gastric cancer resection surgery segmentation dataset. Ablation experiments were conducted to validate the effectiveness of the relevant algorithms.

Conclusion

The field of surgical image recognition and segmentation deserves further in-depth research and exploration. In this study, we reconsidered the problem of image recognition caused by intraoperative surgical image adjustments and proposed a new algorithmic framework for intraoperative surgical image recognition and segmentation. This framework helps to clarify the relative positions of the surgical site and surrounding blood vessels and nerves, effectively reducing the incidence of surgical complications and widely recognized by surgical doctors.

2. 伦理委员会审查批件

西安交通大学医学院第一附属医院

伦理委员会审查批件

受理号: KYLLSL-2021-101　　批件号：2021 伦审科字第（151）号

No: XJTU1AF2021LSK-151

项目名称	智能外科机要助理在肝胆胰微创手术中的应用研究				
项目来源	陕西省科技厅				
牵头单位	西安交通大学第一附属医院				
承担科室	肝胆外科	项目负责人	刘学民	职称	主任医师
审查方式	■快速审查　□会议审查				
送审材料	1．伦理审查申请表 2．研究方案　版本号：V1.0　版本日期：2020 年 7 月 12 日 3．知情同意书　版本号：V1.0　版本日期：2021 年 3 月 2 日				

审查结论	同意	作必要修正后同意	作必要修正后重审	不同意	终止或暂停
	√				

伦理会意见：

1. 经审查，本项目研究方案未违背伦理原则，同意开展本研究。
2. 该研究进行过程中，伦理委员会进行定期跟踪审查，审查频率：
   3 个月□　6 个月□　12 个月■

主任委员：　　时间：2021 年 5 月 20 日

注意

1.对已批准的临床研究方案、知情同意书等材料的任何修改及主要研究者更换等，请及时通知本伦理委员会重新审查，获得批准后执行。

2.根据本伦理委员会的定期跟踪审查频率，请在审查日到期前一个月提交定期跟踪审查报告。

3.发生严重不良事件及时报告。暂停/提前终止临床研究或项目结束，请提交相应的报告。

4.本审查结果只涉及对伦理问题的审查结论，如相关研究要求办理相应手续，如到上级部门办理审批/备案手续，或按医院要求需要签署合同书/协议书的，请在项目开展前先行办理上述手续。

本伦理委员会严格遵循 ICH-GCP、GCP 和相关法规的要求进行构建、运作、实施各项操作程序。联系地址：西安市雁塔西路 277 号　　联系人：张彩霞，　电话/传真：　85323473

西安交通大学医学部医学生物科研伦理审批件

编号(No)：2022-1628

我部　吕毅　申请项目《　临床微创手术术中影像记录系统　》经过生物医学伦理委员会的审核，符合伦理原则，同意申报。

西安交通大学医学部生物医学伦理委员会

伦理委员会主任委员签章 陈腾

2022 年 11 月 22 日

3. 社会评价

项目推荐函

本人对于彭子洋同学创立的陕西云链智康科技团队开发的智能外科机要助理系统总体评价如下：

该系统稳定性强，操作简便，易于掌握，将其应用于医患沟通，明显提高了医患沟通的效率。该系统为术后治疗方案的制定提供了准确的参考价值。通过互联网+技术完成的远程会诊系统 APP,实现了术后患者的家庭环境康复，实现了手术医生-患者-随访医生的有效沟通，节约了医疗资源、降低了医疗费用。

总之，该系统智能、高效，不但可大大减轻医护人员的工作负担，而且有助于提高手术记录质量，并将助力互联网+时代智能医疗体系的建立，将带来外科手术记录的一场革命，整体达到国际领先水平。

推荐人：

项目推荐函

本人对于彭子洋同学创立的陕西云链智康科技团队开发的智能外科机要助理系统总体评价如下：

第一：该项目解决了目前外科手术记录“千术一式”的问题，可以实现外科手术记录的个体化及精准化，是实现“精准医疗”的必备条件。

第二：该项目临床应用范围广泛，包括：手术图文记录，医患沟通，外科年轻医生教学，术后进一步治疗的方案确定，远程会诊等。

第三：该项目可自成体系，亦可与医院信息系统结合，实现真正的“数字化医疗”，方便手术记录的保存及调取工作。

第四：该项目方便学习，设备简练，易于在医院推广应用。特此推荐。

推荐人：

项目推荐函

彭子洋同学创立的陕西云链智康科技团队自主研发的智能外科机要助理系统具有良好的工作性能，适用于多种医疗环境，提高手术记录的准确性，并可大大节省医疗资源，并利用该系统进行外科教学及医患沟通，取得良好的效果。该系统在很短时间内就在陕西省内外多家医院进行了推广应用，说明了该系统具有很强的推广应用前景，且易于被外科医生、手术患者所接受，特此郑重推荐。

推荐人：


中国教育报
ZHONGGUO JIAOYU BAO
“真刀真枪”中锻造实战本领
引导更多高校毕业生到民营企业就业
不断提升主题教育质量和效果
用阅读拓宽孩子生命广度
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2023年04月29日 星期六
下一篇
西安交大努力培养善于解决复杂工程问题的卓越工程师队伍——
“真刀真枪”中锻造实战本领
本报记者 冯丽 通讯员 李彧
■着力推进卓越工程师培养
“对新能源处理特性进行分析和提取，进而进行电力电量平衡的测算，可以更好地指导国家电力系统的运行和调度。这项研究的数据量庞大，如果没有企业导师指导，我很难将自己在学校所学运用到实际当中。”对西安交通大学2022级储能方向博士生胡骞文来说，到南方电网公司实习并得到企业导师指导是段重要的成长经历。同时，依托课题组与广东电网公司的校企合作项目，胡骞文关于“多类型规模化的储能智能规划与接入技术研究”的博士课题研究也正在展开。
像胡骞文一样，在西安交大，越来越多的工程硕博士生在学校和企业双导师的指导下，将企业攻关课题作为自己的研究课题。近年来，该校积极适应新一轮科技革命和产业变革新趋势，把卓越工程师教育培养作为“双一流”建设的重要任务，持续深化工程教育改革，努力培养造就爱党报国、敬业奉献、具有突出技术创新能力、善于解决复杂工程问题的卓越工程师队伍，取得阶段性成效。
助力校企协同培养卓越工程人才

“思源”医疗器械高峰论坛邀请函

医电校友会秘书处 交大医电校友会 2023-05-07 08:30 发表于英国

“思源”医疗器械高峰论坛

暨西安交通大学医电校友会第十四届校友论坛

融合创新 协同发展

会议简介

一年一度的“思源”医疗器械高峰论坛暨西安交通大学医电校友会第十四届校友论坛即将于5月16日如期举行。“思源”医疗器械高峰论坛，作为每年CMEF期间的传统活动，至今已举办十三届，累计参与学者、企业家、交大师生万余人次，并受到与会人员的广泛好评。回顾去年论坛，受疫情影响，原计划在上海举办的会场转场至深圳，随后又转向线上举办。校友们在云端相聚，共同交流与探讨医疗行业的发展现状与未来趋势。虽然线上论坛取得了良好的关注度和成功，但我们更期待着疫情结束后的线下相聚，面对面交流和分享后疫情时代医疗器械行业的最新成果和发展动态。

本次论坛的主题依旧是“融合创新，协同发展”，旨在探讨医疗器械行业的新技术、新政策、新需求，分享行业的最新发展动态。论坛邀请的专家覆盖教育、企业、投资等多个领域，希望通过本次论坛，促进不同领域专家、学者、以及校友们之间的交流和合作，为医疗器械行业的发展提供更多思路和方向。我们相信本次论坛将为参与者带来难得的交流机会和宝贵的经验启示，同时也为医疗器械行业的创新与协同发展注入新的动力和活力。

16:30-17:10 圆桌论坛：新形势下促进医工融合创新，协同发展

谈 庆 辰德资本创始合伙人

郑 毅 瑞莱谱(杭州)医疗科技有限公司 创始人

骆志坚 聚融医疗科技(杭州)有限公司 CEO

李 龙 西安交通大学生命学院教师
西安穹顶医疗科技有限公司创始人兼CEO

彭子洋 西安交通大学未来技术学院
医工学方向临床医学博士