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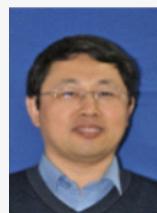
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科研方向

研究领域包括：AI+医学图像分析+临床应用、医学可视化与三维重构、计算机辅助智能影像诊断、计算机辅助术前手术规划、临床预后分析、图像图形分析等。

目前研究的主要内容包括：

(1) 基于智能计算的医学可视化及三维重构技术及其临床应用

----体绘制可视化技术中三维图像的分类与传递函数设计问题；

----视觉激励的三维图像中隐边界曲面的自适应检测与重构方法研究 (多视觉机制的集成的应用)；

(2) 智能医学影像分析及其临床应用

---- 基于机器学习及先验知识的三维图像中感兴趣器官的分割及体绘制可视化；

---- 计算机辅助的智能医学影像诊断技术及其临床应用（特定类型病灶的检测、分割）

---- 基于机器学习的医学影像中各类异常的自动检测 (计算机该如何学习医生的影像读片能力？)

---- 基于影像组学的医学影像定量分析；基于多组学数据的临床问题定量分析

---- 基于深度学习或影像组学的(智能化及定量化)临床预后分析

(3) 计算机辅助术前手术规划、术中辅助及其临床应用：+3D 打印，+VR

(4) AI及大数据分析在临床诊疗流程中的集成应用：小儿先心病的精准治疗、头颈肿瘤的个性化精准诊疗......

科研成果

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国际挑战赛获奖

参见网页链接： https://automation.sjtu.edu.cn/show/1113

2022年 医学影像分析领域顶会MICCAI在2022年举办的三个国际挑战赛

crossMoDA 2022 (Cross-Modality Domain Adaptation for Medical Image Segmentation and Classification) (Task 2)

HECKTOR 2022(Head and neck Tumor segmentation and outcome prediction challenge 2022)(Task 1)

KIPA 2022 (Kidey Parsing for Renal Cancer Treatment 2022 Challenge)

分别以研究生杨涛、孙潇、刘羽晟为首的实验室三个团队参加了上述挑战赛并分别获得**第一名、第二名、第三名。**

2021年 医学影像分析领域顶会MICCAI在2021年举办的三个国际挑战赛

KiTS2021 (2021 iteration of the Kidney and Kidney Tumor Segmentation Challenge)

FeTA2021(Fetal Brain Tissue Annotation and Segmentation Challenge)

Automatic Segmentation of Head and Neck Primary Tumors in FDG-PET and CT Images

分别以研究生赵忠臣、刘昊、安承洋为首的实验室三个团队参加了上述竞赛，分别**获得第一、第二、第二。**

2020年 医学影像分析领域顶会MICCAI在2020年举办的两个国际挑战赛

"Thyroid Nodule Segmentation and Classification"，

"Anatomical Brain Barriers to Cancer Spread: Segmentation from CT and MRI images"，

博士生陈怀为首的实验室团队分别参加了上述两个挑战赛，并分别获得**第二名及第三名。**

2020年 医学影像分析领域著名国际会议ISBI在2020年举办的两个国际挑战赛；

"Multi-organ Nuclei Segmentation and Classification"

"Automatic image grading of Diabetic Retinopathy"

分别以硕士生吴希仪、李江为首的实验室两个团队参加了这两个竞赛，均**获得第二名**

2019年 医学影像分析领域顶会MICCAI在2019年举办的国际挑战赛

"Automatic Structure Segmentation for Radiotherapy Planning Challenge 2019";

博士生陈怀为首实验室团队在四项竞赛任务中获得**三项冠军(Tasks 1，2，4)及一项第六**

竞赛内容：放疗规划中危及器官、靶区的智能勾画，包括四项不同的智能分割任务：

Task 1: Organ-at-risk segmentation from head & neck CT scans(头颈部危及器官分割)；

Task 2: Gross Target Volume segmentation of nasopharynx cancer(鼻咽癌放疗靶区分割)；

Task 3: Organ-at-risk segmentation from chest CT scans(胸部危及器官(OAR)分割)；

Task 4: Gross Target Volume segmentation of lung cancer(肺癌放疗靶区(GTV)分割)；

2018年 南京市人民政府主办全球人工智能大赛，国内外1000多个团队参赛；

2018全球人工智能应用大赛；

博士生陈怀为首的实验室团队参加大赛并获得并列**第三名、二等奖**；

获奖项目(智能医疗)："CBCT智能牙根分割"；

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