Three-dimensional(3D) Reconstruction Has Been Gradually Used For Accurate Preoperative Surgical Planning

Challenges in Segmentectomy for Lung Surgery

With the increasing number of chest CT scans performed each year, more lung lesions, such as ground glass nodules, are being diagnosed, often indicating pre-invasive lesions and early-stage lung cancer. Segmentectomy requires precise knowledge of pulmonary nodule location and the anatomy of target segments, blood vessels, and bronchi.

Complexities in Hepatic Surgery

Liver cancer, hepatolithiasis, hepatic hemangioma, and hepatic echinococcosis are common in hepatobiliary surgery, with surgery being the main treatment. However, the liver's complex anatomy, with frequent vascular variations and lesions closely connected to blood vessels and bile ducts, poses challenges for precision surgery.

3D reconstruction is gradually introduced in preoperative planning

Three-dimensional reconstruction aids in preoperative positioning, surgical planning, preoperative simulation, and intraoperative navigation, providing a reference for individualized surgical plans. Studies show that anatomic pulmonary segmentectomy is as effective as traditional lobectomy for treating early-stage non-small cell lung cancer (diameter less than 2.0 cm)(Wu Z, et al., Thorac Cancer. 2022).

3D Reconstruction Is More Intuitive And Clear

Two-dimensional (2D) Computed Tomography
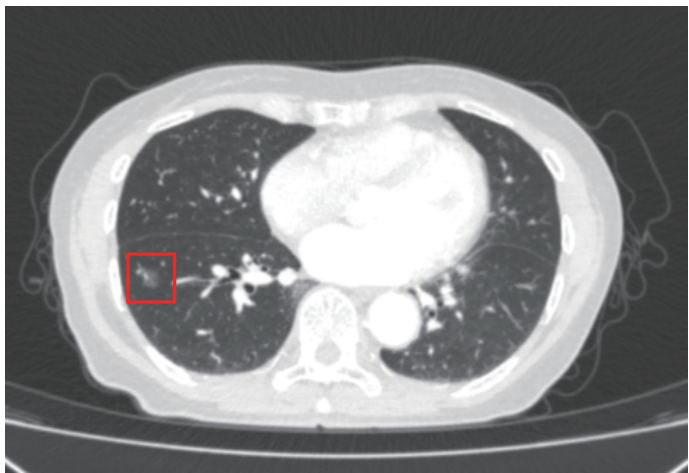
- Variability in spatial perceptionSkills among doctors
- High anatomical and radiological imaging expertise is required for nterventional and surgical specialists.
- Extended time required for organ and lesion identification, inceasing surgical Risks

Three-dimensional Computed Tomography Reconstruction
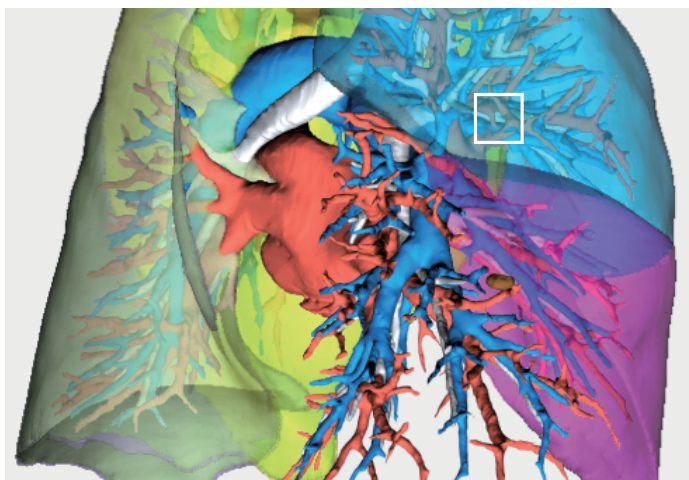
- Automated rre-operative simulation for 3D anatomy reduced surgical risks
- Assisting junior doctors in quickly mastering minimally invasive liver or lung segment resection techniques
- Detects vascular variants which 2D CT cannot identify

About PVmed

Backed by top-tier investors like Cherami Investment Group and Philips, PVmed is a global leader in AI-powered radiation and surgical oncology solutions, committed to enhancing patient care through precision and innovation. With a diverse portfolio of cutting-edge products, including the FDA-approved auto-contour product PVmed Contouring Software, PVmed is dedicated to providing high-quality, fast, and precise treatment options.
Trusted globally, PVmed's solutions have been adopted by over 500 cancer centers worldwide, enhancing treatment for more than 700,000 patients. PVmed seamlessly integrates advanced technology into clinical practice, setting new standards in medical care and delivering world-class solutions to patients and clinicians.

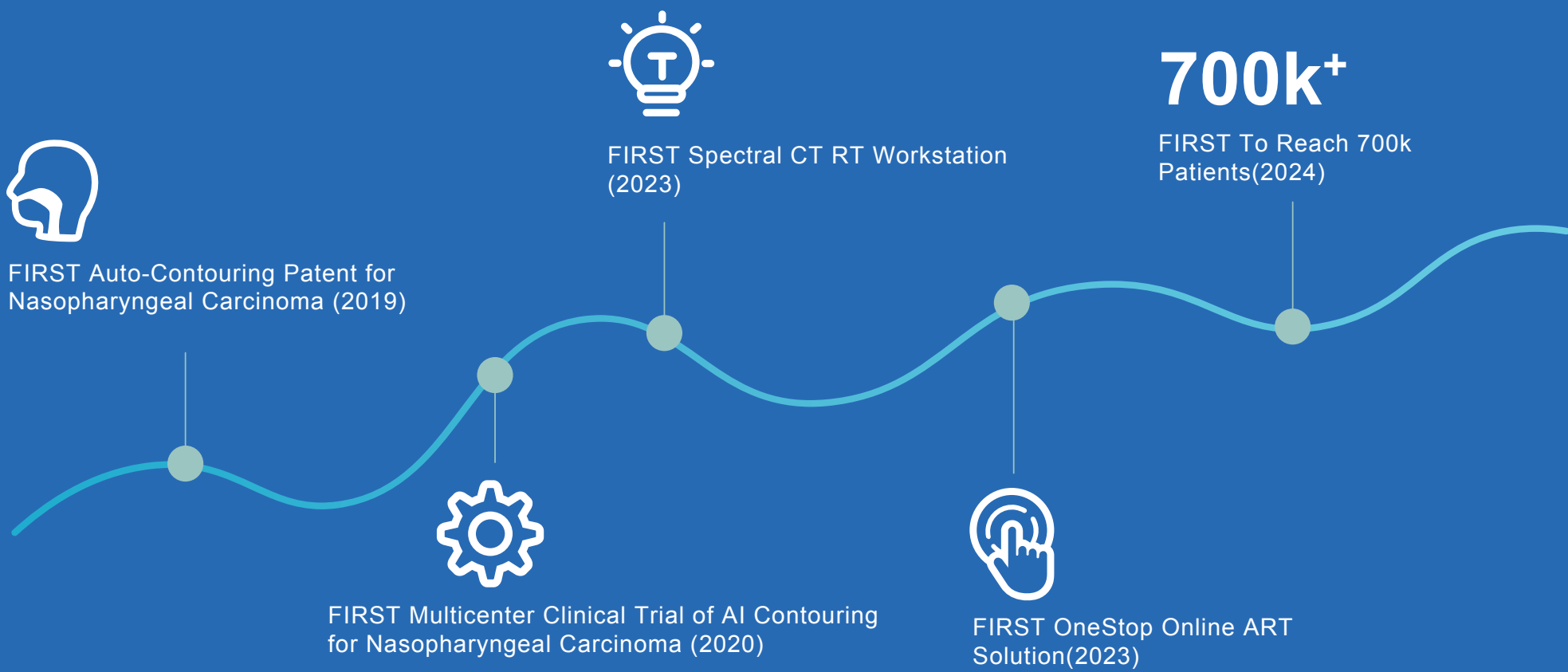## Certifications

| FDA | NMPA | MoH Indonesia | ISO 9001 | ISO 13485 |

| ISO 27001 | ISO 27000 | ISO 14000 | ISO 45001 |

PVmed: Pioneering Milestones
Industry Leaders and Trendsetters in the True Sense

FIRST Auto-Contouring Patent for Nasopharyngeal Carcinoma (2019)

FIRST Multicenter Clinical Trial of AI Contouring for Nasopharyngeal Carcinoma (2020)

FIRST Spectral CT RT Workstation (2023)

FIRST OneStop Online ART Solution(2023)

700k+
FIRST To Reach 700k Patients(2024)

Facebook   **LinkedIn**

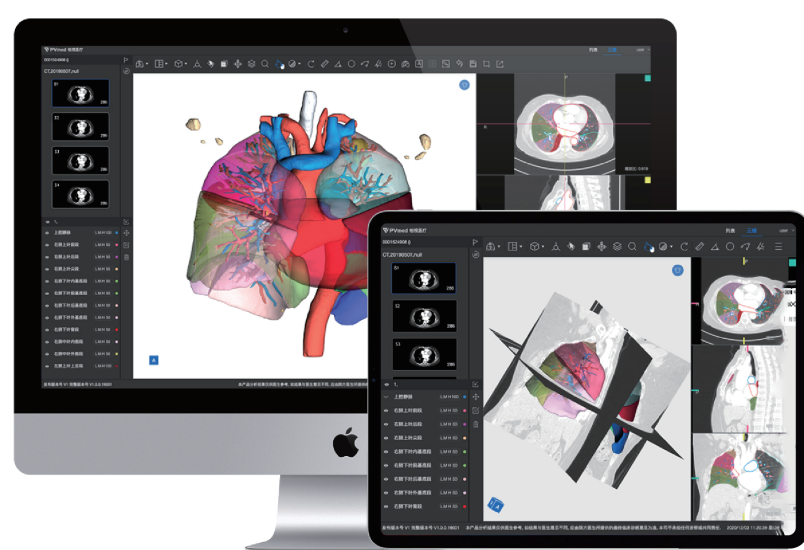### Perception Vision Medical Technology Co., Ltd.
email: contactus@pvmedtech.com

PVmed

PV-IVISION

AI-powered 3D Computed Tomography Reconstruction System

PV-iVision Software

Employ state-of-the-art AI technology, like deep Iterative 3D convolutional neural networks, for precise pre-op planning in thoracic and abdominal surgeries. PV-iVision ensures thorough analysis of anatomy, providing surgeons with tailored, real-time surgical plans. This boosts precision and safety, transforming surgical practices.

One-click Reconstruction

- Thoracic: Supports non-contrast and contrast-enhanced CT data, compatible with high-resolution data
- Liver: Supports reconstruction of arterial and venous phase data, One-click quick reconstruction in 5 minutes, meeting routine surgical requirements

Rich Manual Editing Features

- Provides 20+ manual editing tools
- Various morphological operations tools to assist with high-efficiency reconstruction
- Supports multiple manual reconstruction functions such as region growing, brush modification, and intelligent interpolation

Intelligent Quantitative Analysis

- Smart volume measurement and quantitative analysis
- Automatic measurement of lesion size, volume, and adjacent segment distance
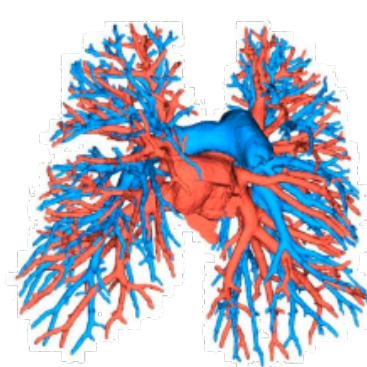- One-click preoperative assessment report

Assistive Planning Tools

- Lesion safe resection boundary indication and simulation
- Supports anatomical surgical planning with custom surface segmentation and drainage analysis
- Various measurement functions, supporting both 2D and 3D measurements

01 Thoracic 3D Reconstruction

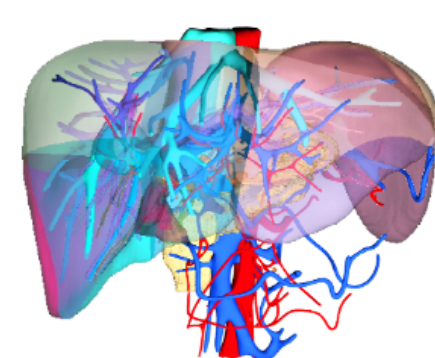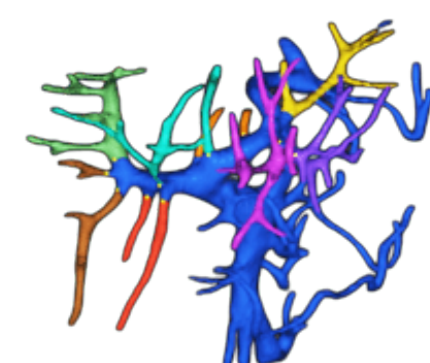Pulmonary vascular tree segmentation
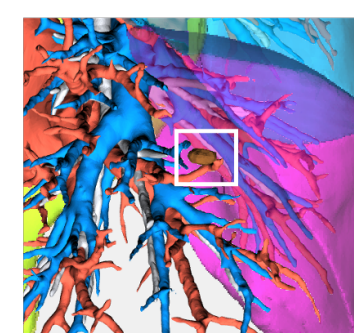
Lesion segmentation

Reconstruction of lung segments and surgical margin

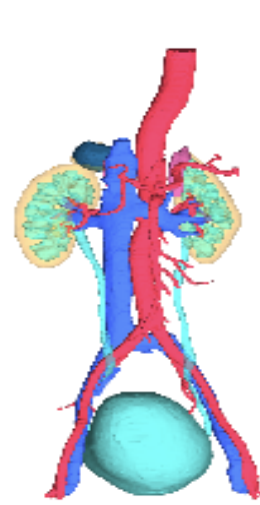## Upper Abdomen 3D Reconstruction 02

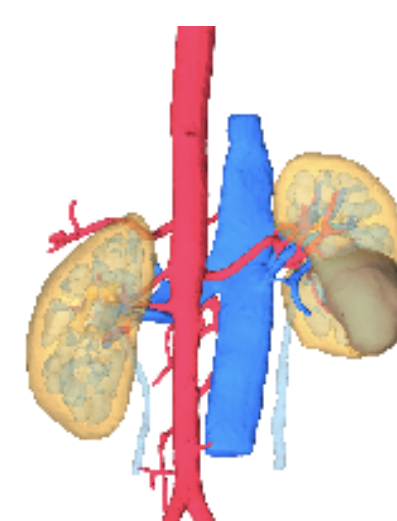
Automatic Reconstruction of Liver Subsegments

Drainage Analysis

03 Lower Abdomen 3D Reconstruction

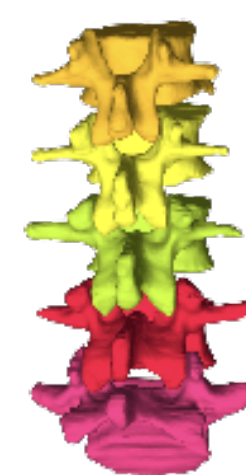Reconstruction of multiple urinary system organs

Precise reconstruction of renal artery

Spinal 3D Reconstruction 04

Automatic reconstruction of spine and hip bones

Fusion of multi-modality reconstruction result
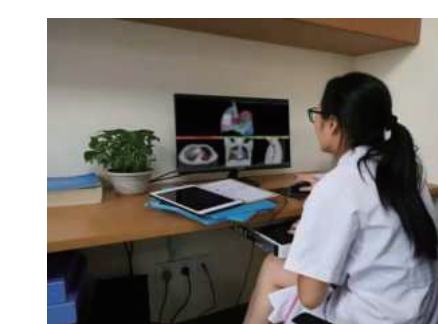
Multiple Application Scenarios

- Thoracic Surgery
- Hepatological Surgery
- Urology Surgery
- Spine Surgery
- Radiology Department
- Interventional Thearpy

Preoperative Planning

Operative Guiding

Postoperative MDT

Advantages

Precise
Reconstruction of vessels at the segmental level and above

Fast
One-Click rapid 3D reconstruction in 5 mins

Automated
Seamlessly integrated into current workflow

Visualized
Multi-platform browsing on PC, mobile, phone and tablet

Application Case

A Team of 3 Manual Modeling Technicians

With iVision	Manual
Average: ~6 cases/(person*day)	Average: ~2 cases/(person*day)
Maximum: 4500 cases/year	Maximum: 1500 cases/year
Average process time: <1h	Average process time: >4h