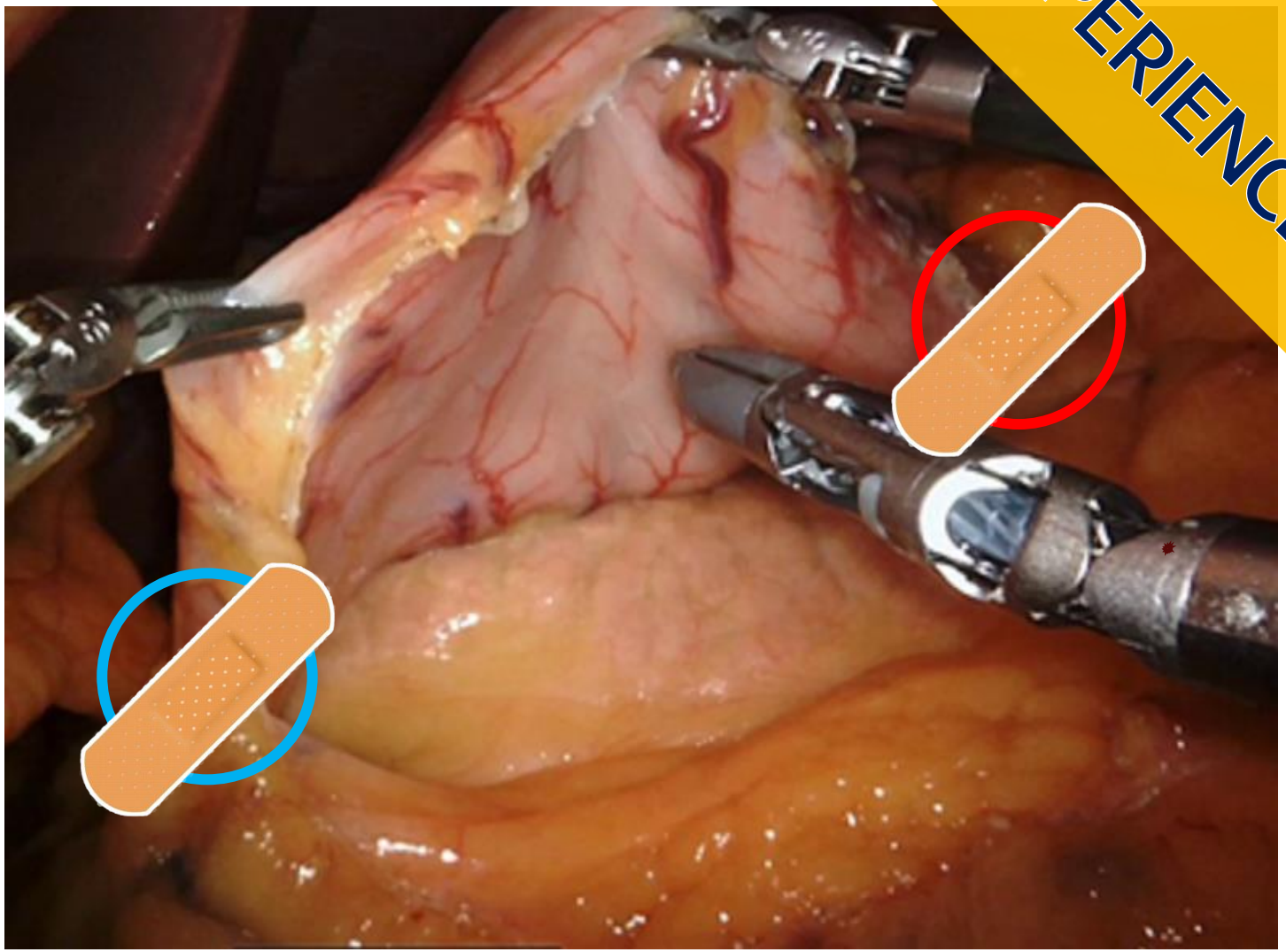
Augmented Reality
Surgery Glass System 1.0:

Detection of the Potential Bleeding Spots

Content



Gastric resection surgery

1. Doctor resources

360,000
Total

213,800
With Medical License

14,900
Experienced Doctors

BACKGROUND

2. Current Remedies

- Second Operation
- Ethamsylate +

Airbag Compression & Endoscope

AI&AR Technology

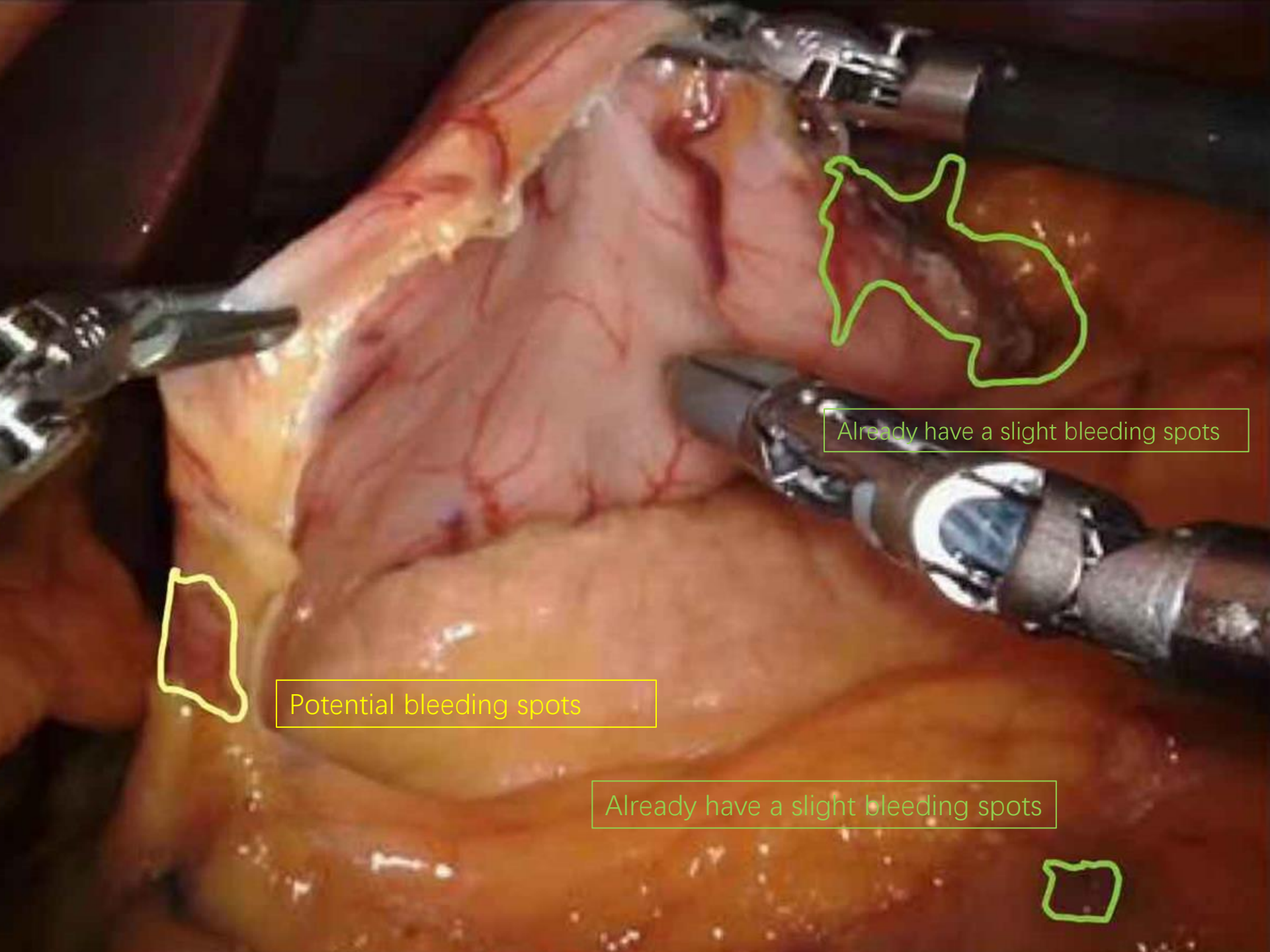
GPU

WiFi6.0

API

Google Glass

Industrial Revolution 4.0


Already have a slight bleeding spots
Potential bleeding spots
Already have a slight bleeding spots

Content

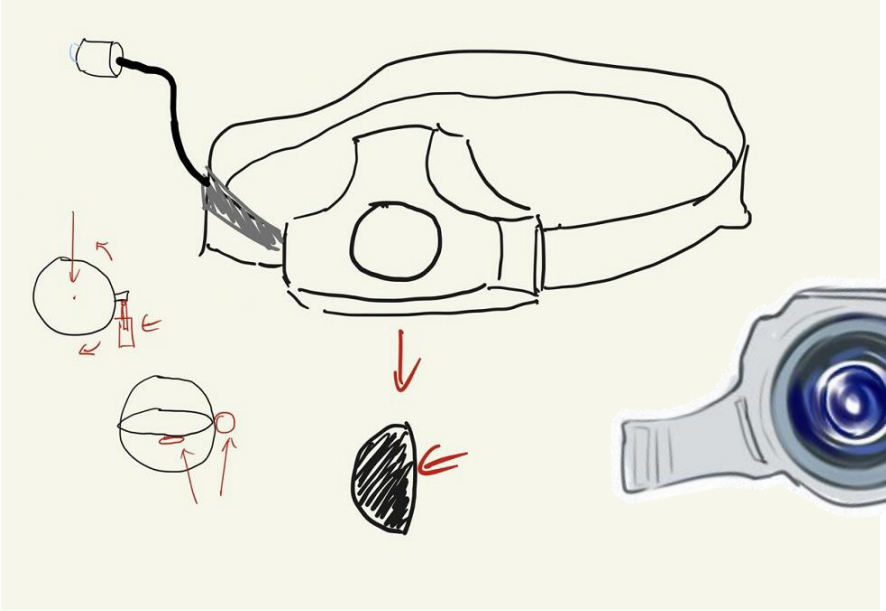

1
2
3
4

Camera

Starting Point of the Image

Camera

Starting Point of the Image



Wide-Angle Lens

Stepper Motor

Camera

Starting Point

Backpack

Transmission Station of the Image

Backpack

Transmission Station of the Image

Chips

Wireless Signal Transmission

Dual Battery

Camera

Starting Point

Backpack

Transmission Station

Host Computer

Processor of the Image

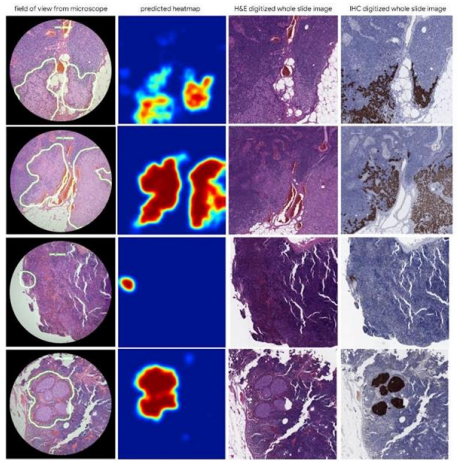
1

2

3

Host Computer

Processor of the Image



Heat Map

- **Common high-performance computer**
- **Powerful and stable wireless signal transmission**
- **Process image with AI network**

Camera

Starting Point

Backpack

Transmission Station

Host Computer

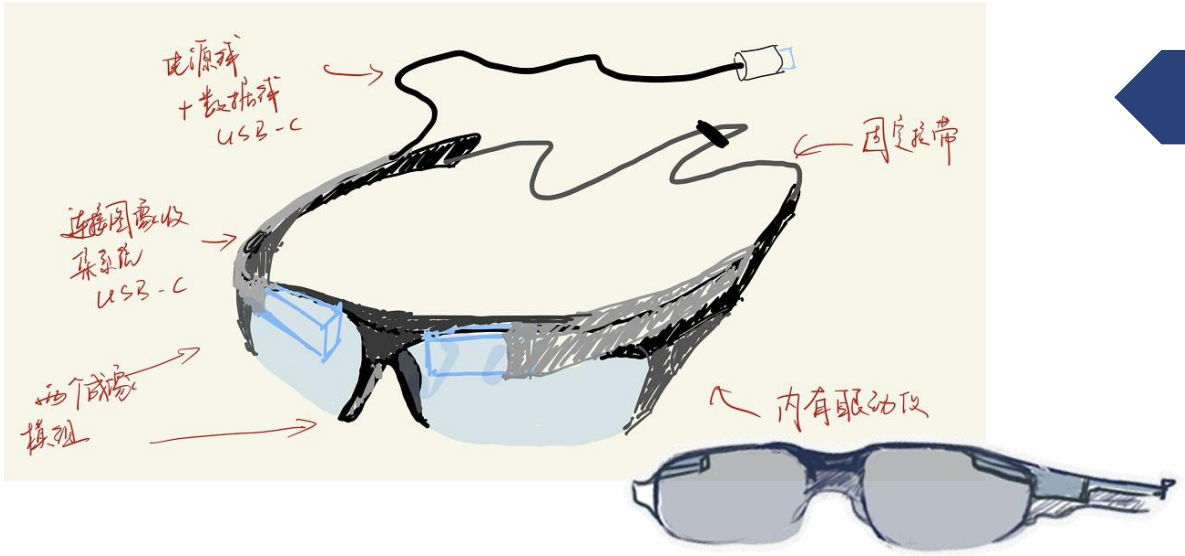
Processor

Glasses

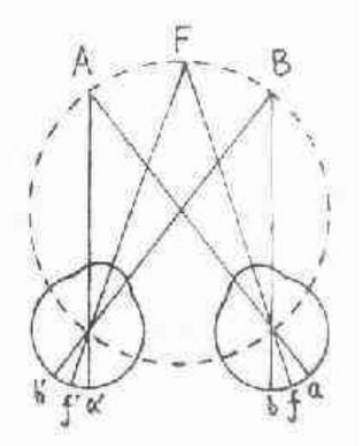
Displayer of the Image

Glasses

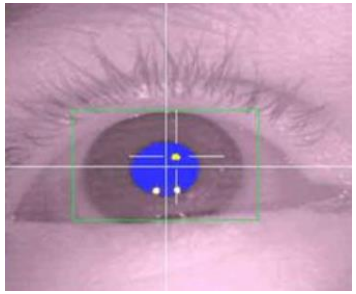
Displayer of the Image



Google Glasses



Double Eyes



Eye Tracker

Technical Details

Camera

Starting Point

Backpack

Transmission Station

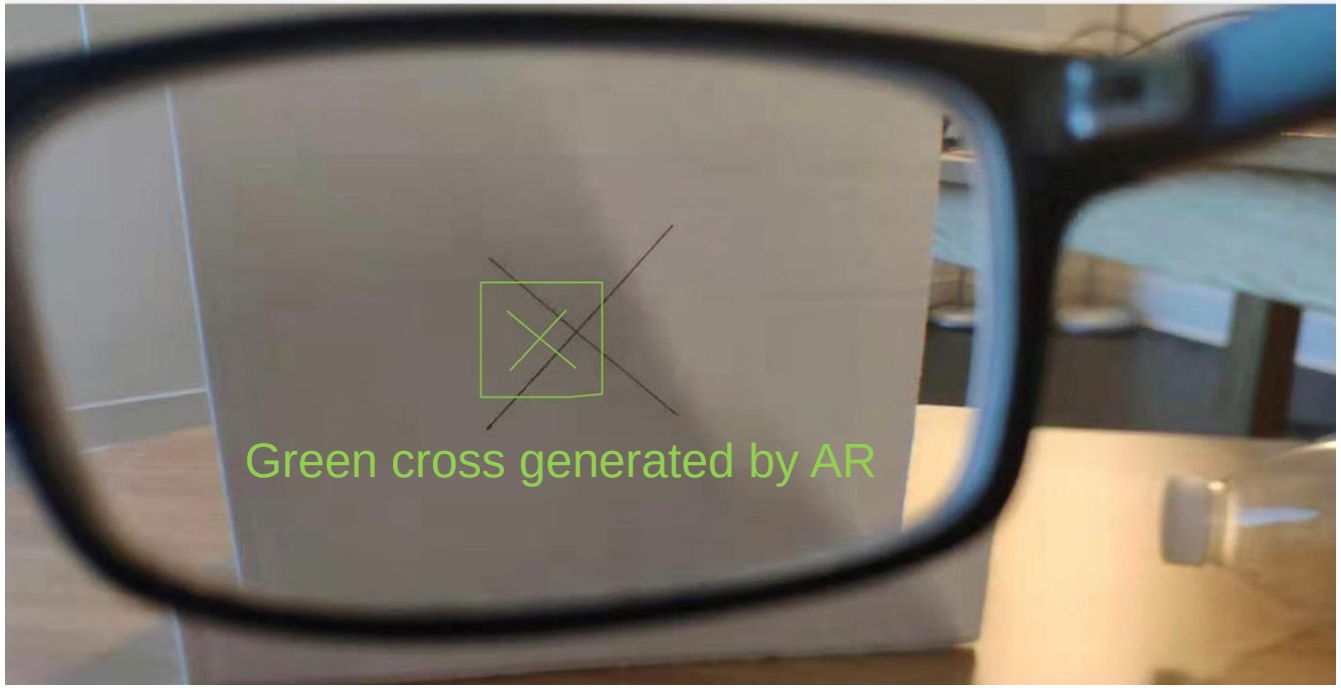
Host Computer

Processor

Glasses

Displayer

/01 GREEN Cross Calibration



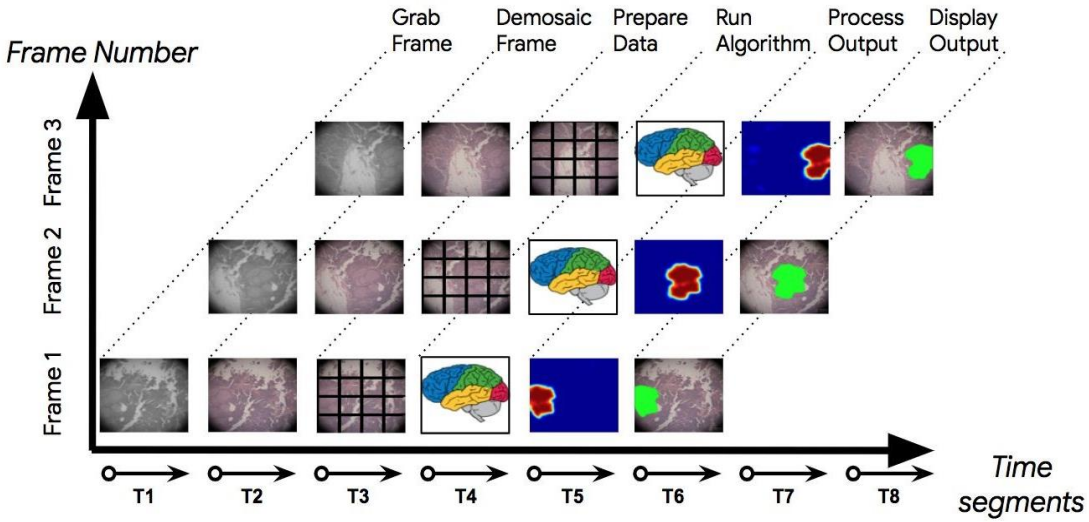
→ **Synchronization between AR and human eyes**

/02 Wide-angle Lens

→ $S_{camera} > S_{vision}$

→ Pre-process

→ ~~Time delays~~

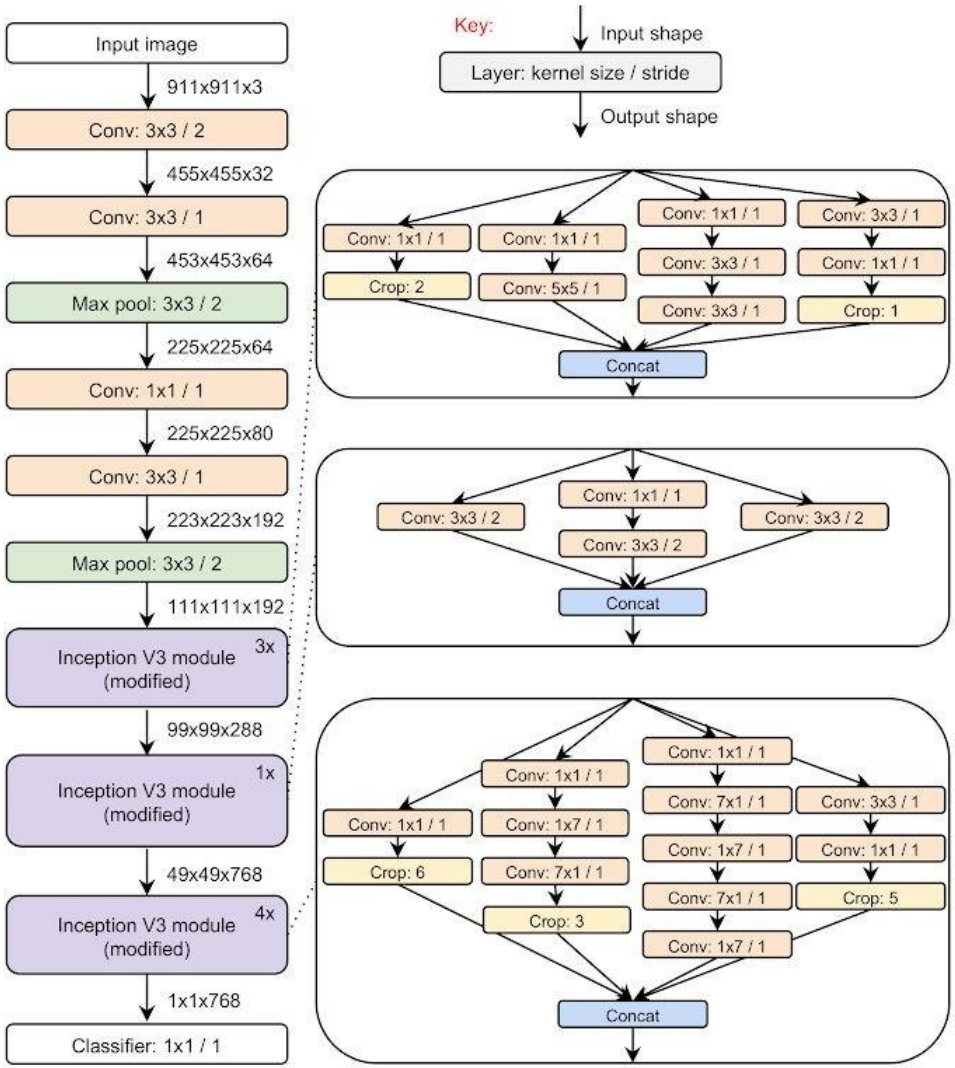


Technical basis:
Thread control

/03 Dual Battery

Dell Latitude 7424 Rugged Extreme Dual Battery Design

/04 AI Network Construction

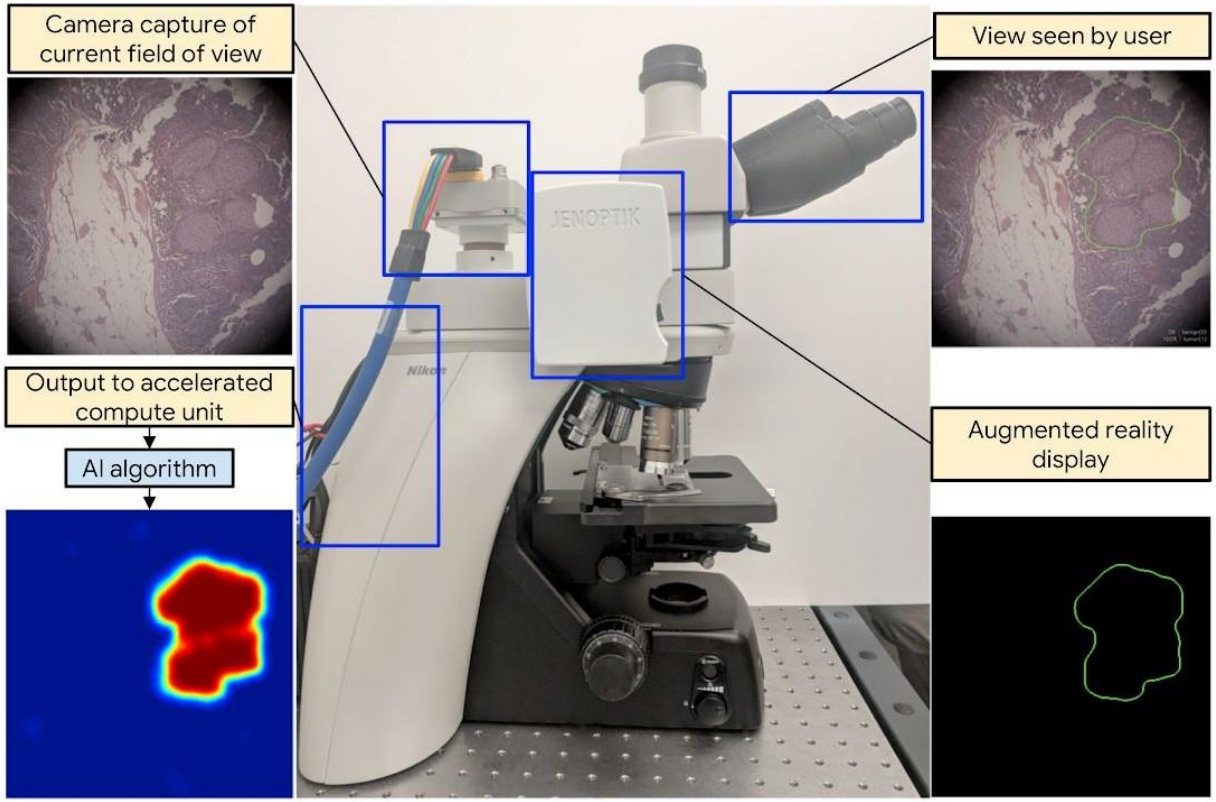


Network Structure

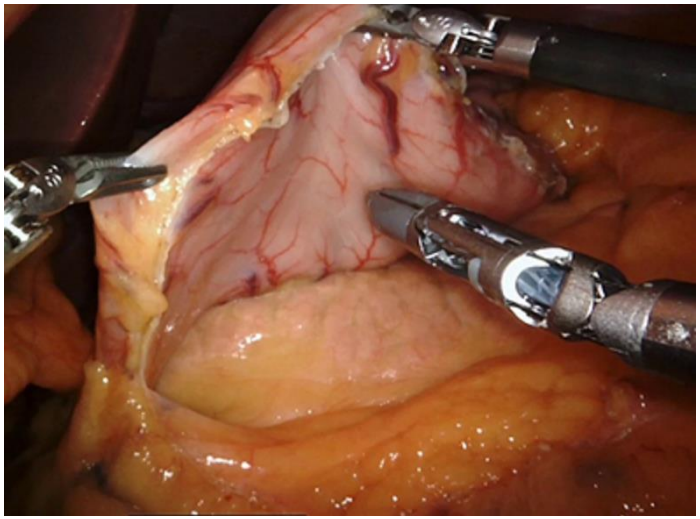
Google Microscope AI Network

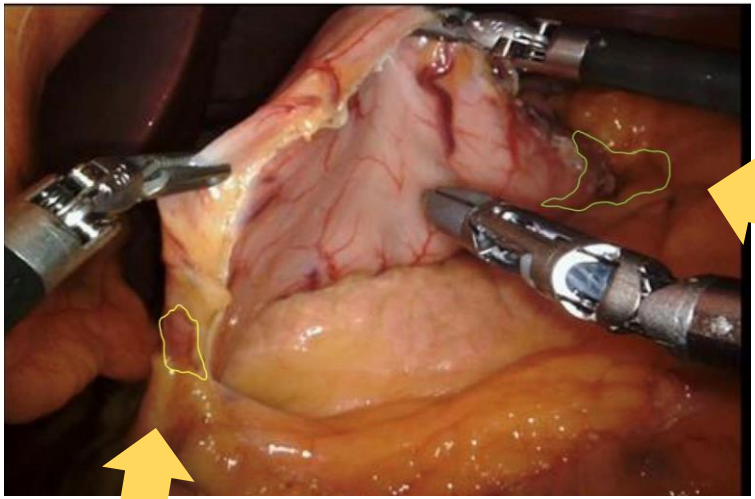
/04 AI Network Construction

Based on Google's AR Microscope Network Generate Heat Map to Assist



/05 Training Data Set





Content

LIMITATIONS

- Hard to calibrate
- Consuming to prepare training data
- Need to develop specific IT system

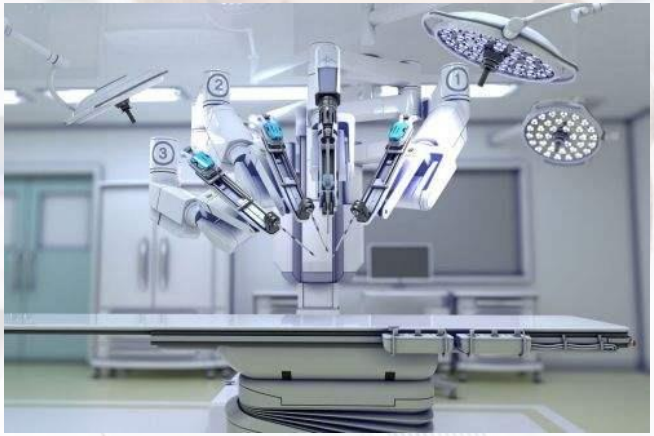
ADVANTAGES

- ✓ **Accuracy** : AI + Human > AI/Human
- ✓ **Practicability** : Present technologies
- ✓ **Adaptability** : Retrain for other surgeries

FUTURE APPLICATIONS

For future surgeries

Camera Surgery



Robotic Surgery

For surgical teaching

Supervision (remote)

Guidelines
(virtual surgery practicing platform)

Reference

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Acknowledgement

- Thank Dr. Larissa for organizing the summer camp
- Thank Dr. Daniel Hashimoto and Dr. Elan R. Witkowski for instructions

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- Members: Zhang Yedi
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  Wang Yikai
  Xia Xiaoting
  Yang Liu


Thanks for Listening