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Median Technologies & iBiopsy®

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ECR AI Theater

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Early Diagnosis Saves Lives

We are helping conquer cancer and fibrotic diseases by extracting unvaluable clinical insights from patients' medical images.

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Our strength is our people: 230+ highly qualified professionals in the US, Europe and China, 25+ nationalities.

Our growth is powered by proprietary AI, computer vision and signal processing technologies, strong KOL connections, and medical, scientific, technology partnerships.

With **iBiopsy®,** our AI-powered imaging platform for the development of Software as Medical Device, we enable clinicians to diagnose patients earlier. We intend to launch our iBiopsy® Lung Cancer Screening SaMD in the US in 2024.

Our i**CRO** imaging solutions and advanced **Imaging Lab** offer help our 80+ biopharma clients drive their oncology clinical studies toward successful approval, using Ai-driven image insights.

iBiopsy®

“shifting the diagnostic paradigm”

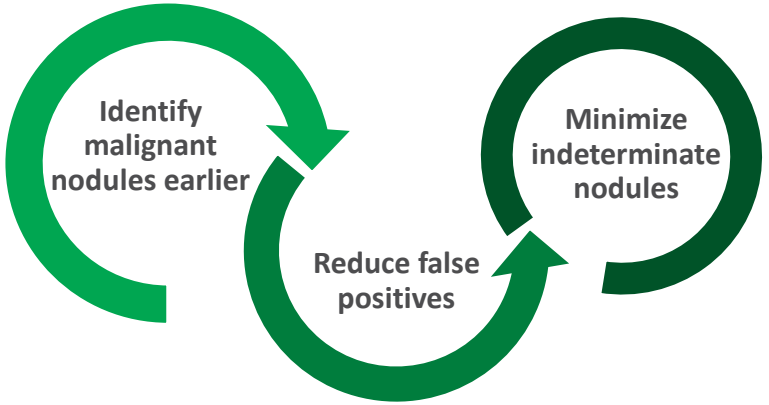
Lung Cancer Screening

I-ELCAP study showed a 92% survival rate at 15Y when diagnosed at stage 1 vs. 5% for stage 4
Lack of diagnosis accuracy is a major hurdle to screening adherence & programs implementation

Facts & Figures

- 1st cancer killer worldwide - 18% of all 2020 cancer deaths
- 1.8M deaths in 2020
- 5-year overall survival rate 18%
- <25% cases in stage 1 when 5-y survival rate is 68%-92%
- >40% cases in stage 4 when 5-y survival rate is <10%
- Rising frequency among never-smokers, 20% in the US & UK
- **Only 870K screenings performed in the US in 2021 – 6% compliance**

Why iBiopsy®?



Why is LDCT screening % so low in the high-risk populations ?

Lack of awareness & False alarms

Result in additional CTs, bronchoscopies, or biopsies.

Low positive detection rate

Ultimately, only about 5% of scanned people will be diagnosed with lung cancer.

Lack of standard of quality testing

Need trained radiologists for all screening
& Many man hours

	LCS Programs	Target population
US	Implemented - USPSTF guidelines	14.5M (USPSTF)
Europe	- Under discussion at EU level - Implemented in Croatia - Developing in UK/IT/FR/GE & Poland	EU T5: 22M (Estimate)
Asia	Implemented in South Korea nationally & China regionally - Japan in study phase	ASIA T3: 100M (Estimate)

Our Differentiators

iBiopsy®, our end-to-end CADe/CADx SaMD

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Clinical value

3 CADe/CADx: Computer-aided detection & characterization

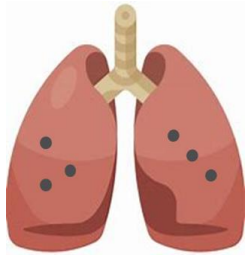
- **End-to-end** nodules **detection** and **characterization** into benign/malignant
- **Better accuracy** for less false negative & false positive results
- **Better patient care due to early diagnosis & treatment**
- **Less healthcare spending due to unnecessary procedures**

2 CADx: Computer-aided characterization

- Automatic nodules characterization into **benign/malignant**
- Higher diagnostic accuracy
- Reduction of false positive & negative results
- Reduction of unnecessary procedures

1 CADe: Computer-aided detection

- Automatic organ detection
- Automatic nodules **detection & quantification**
- Reduction of time to find a lesion
- Increased accuracy



iBiopsy® LCS Intended Use

AI/ML technology-based end-to-end CADe/CADx SaMD / MDSW

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iBiopsy®

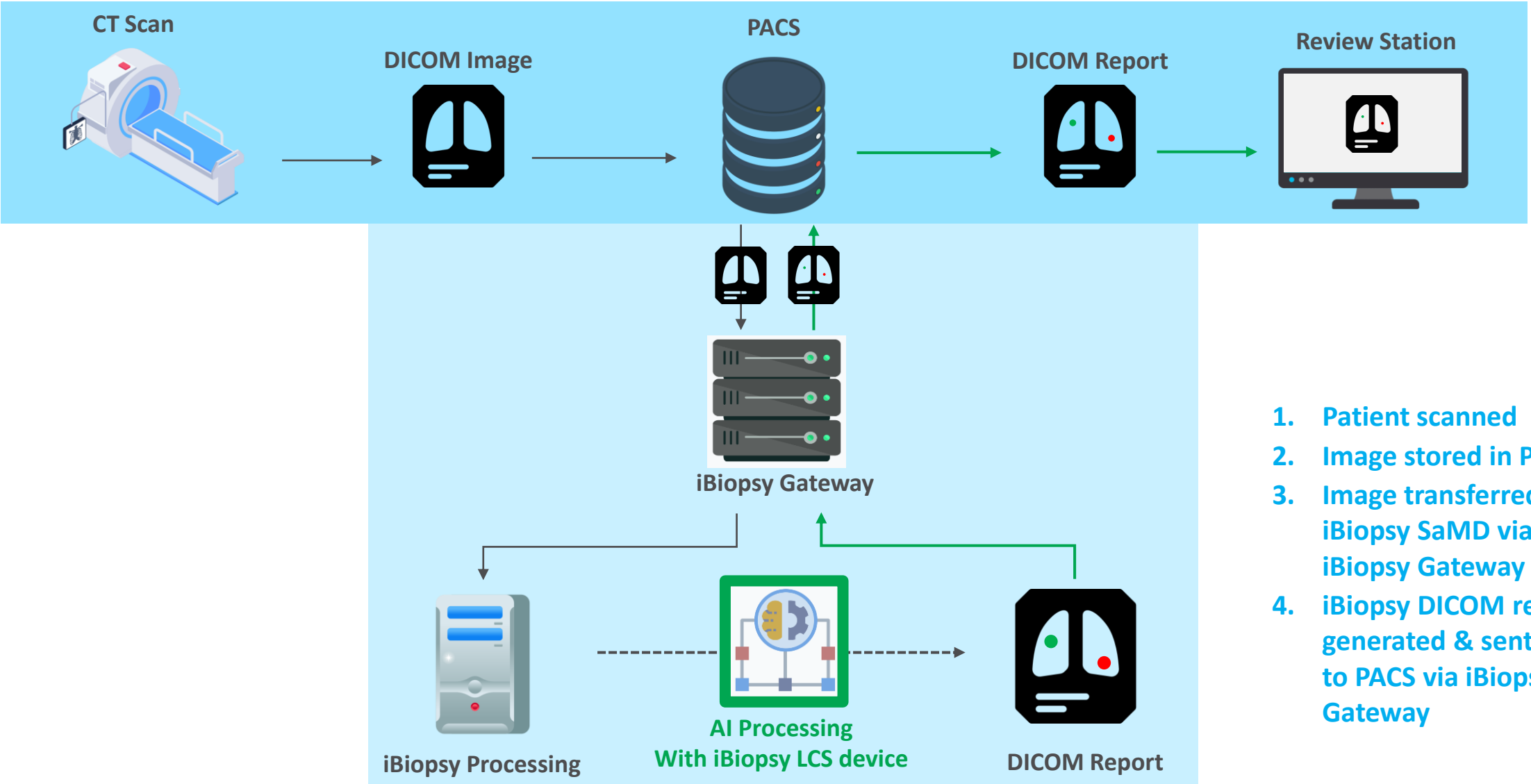
Intended use

iBiopsy LCS is an **AI/ML technology-based end-to-end CADe/CADx** Software as Medical Device intended to allow **early detection and characterization** of lung nodules and to **drive clinical management of patients**.

It is intended to **aid the identification of tumor onset at earliest stage, allowing a better patient care while avoiding unnecessary tests and procedures and reducing healthcare costs.**

Lung & Liver SaMD Workflow

Available as Saas or On-Premise – 4 steps workflow



1. Patient scanned
2. Image stored in PACS
3. Image transferred to iBiopsy SaMD via iBiopsy Gateway
4. iBiopsy DICOM report generated & sent back to PACS via iBiopsy Gateway

iBiopsy® LCS CADe/CADx Processing Methodology

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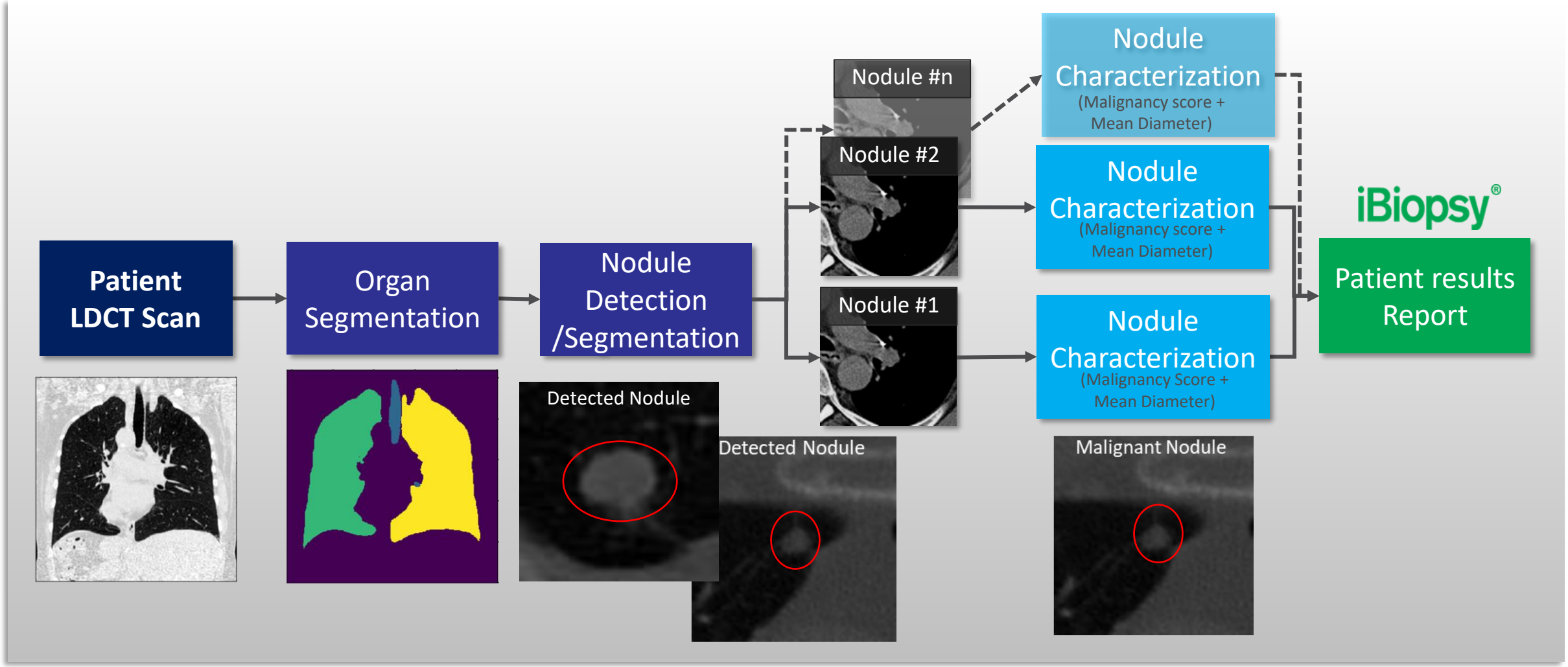
State-of-the-art Artificial Intelligence & Data Science detection segmentation and characterization

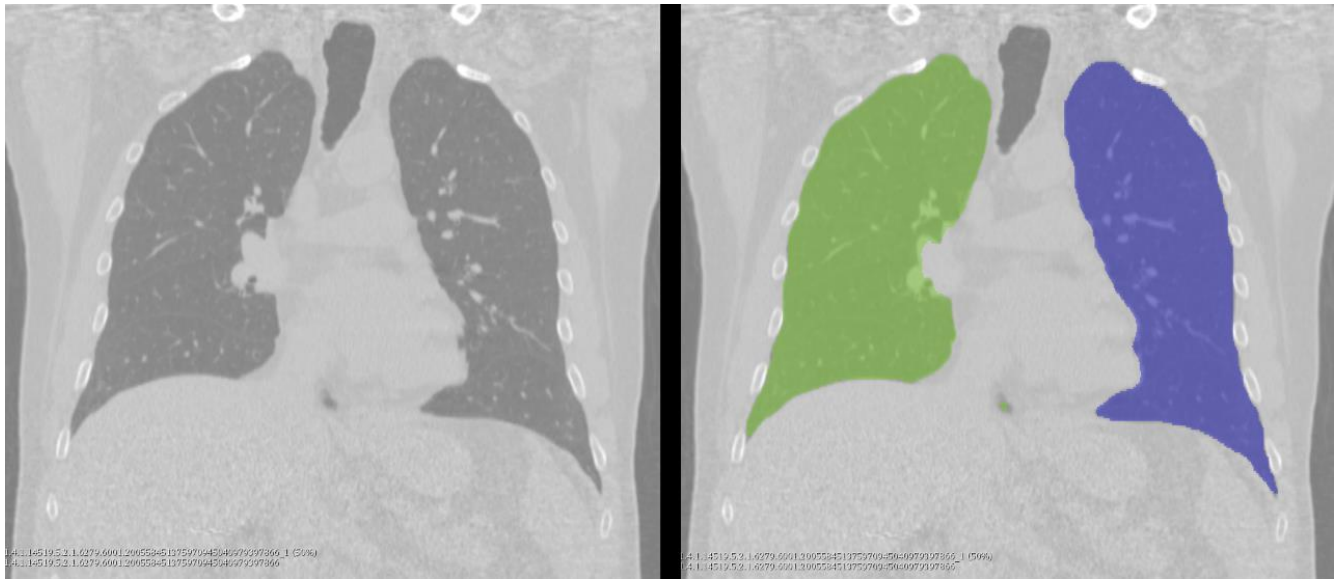


iBiopsy® Lung Cancer Screening

Automatically segment left and right lungs

Lung Segmentation

- Dataset:
  - Training and testing LIDC-IDRI/LUNA16
    - verified and reannotated manually
- Model:
  - Ensemble of Deep Neural Networks
- Performance on test set (80 scans):
  - DICE = 0.991



iBiopsy® Lung Cancer Screening

Lung nodule detection (CADe)

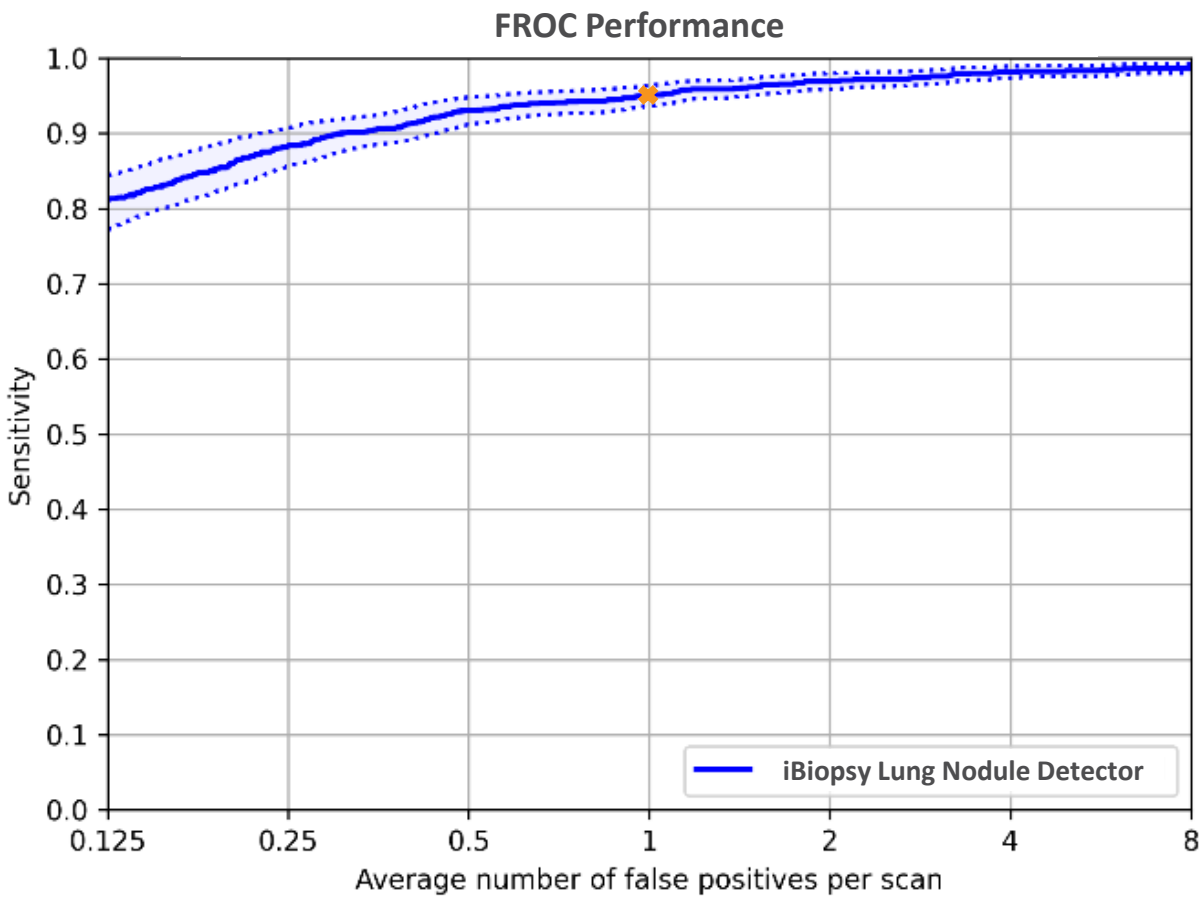
Nodule Detection

LIDC/IDRI Cohort (Luna16 Grand Challenge)

- Lung CT scans of 888 patients annotated by 4 experienced radiologists for a total of 1,186 nodules
- Training set: 800 patients
- Test set: 88 patients
- training/testing using 10-fold cross-validation method

Encoder-Decoder Deep Architecture

- Results: (obtained by aggregating the ten test folds)
- **Sensitivity of 94.9% for a false positive rate of 1 per CT scan.**

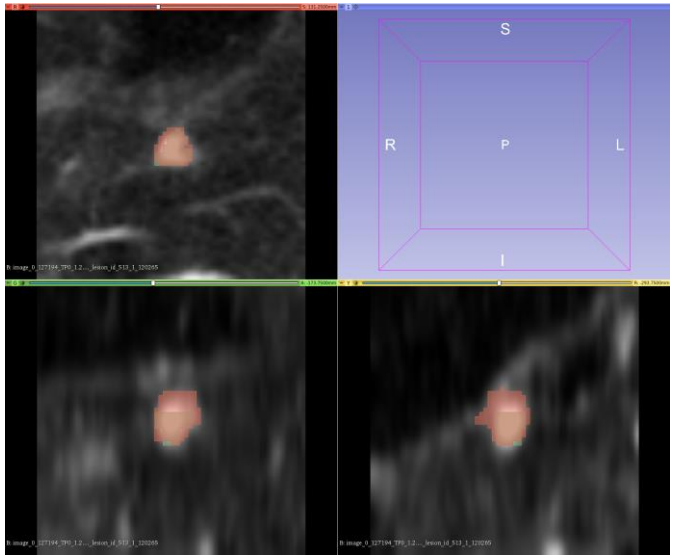


iBiopsy® Lung Cancer Screening

Lung nodule segmentation and measurements

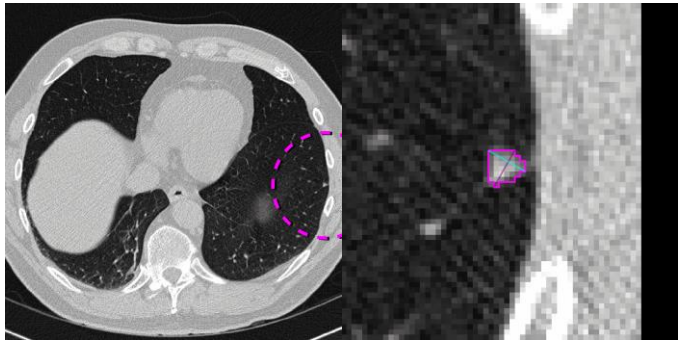
Nodule Segmentation

- Dataset (LIDC/IDRI + NLST):
  - Training: 58594 nodules
  - Test: 13952 nodules
- Model: Ensemble of Deep Neural Networks



Nodule Measurements

- Volume
- Mean Diameter



iBiopsy® LCS CADe/CADx End to End Results

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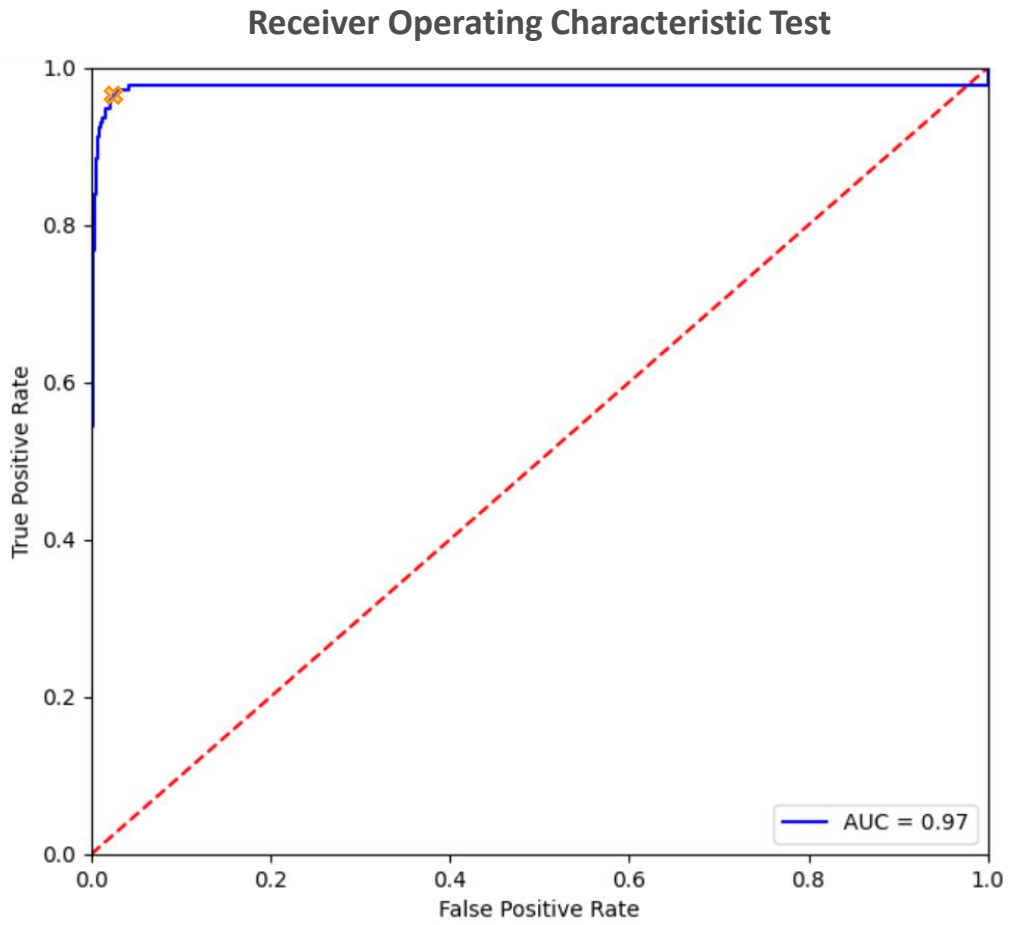
End-to-end Lung nodule detection & characterization with outstanding performance

Nodule detection and Characterization

- Dataset
  - Training (LIDC/IDRI + NLST):
    - 7687 patients (225 malignant) - 158686 Nodules
  - **Test (NLST):**
    - 2176 Patients (independent from Train)
    - 37257 Nodules (172 malignant)
- Model: Combination of Deep Neural Networks (2D + 3D), 3D-Morphological and Radiomics features (Patents Pending)
- Nodule Level Performance
  - **AUC = 0.974**
  - Max Youden Index Operating Point ✖:

    Sensitivity = 96.5 %

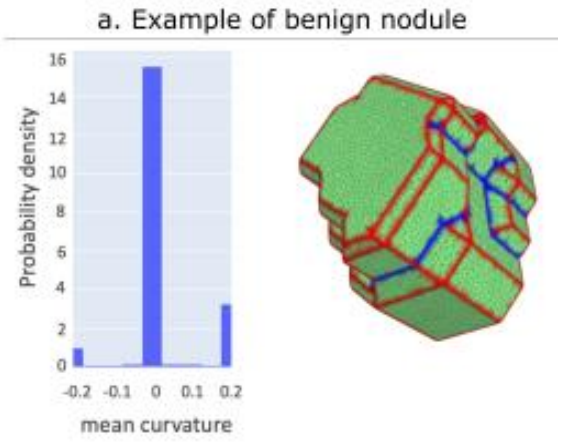
    Specificity = 97.2 %

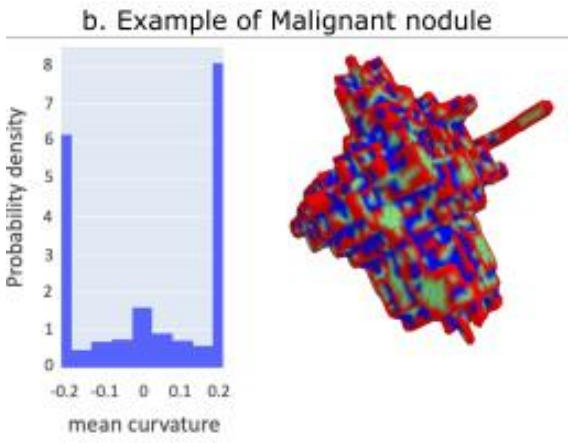


iBiopsy® LCS Morphological Feature

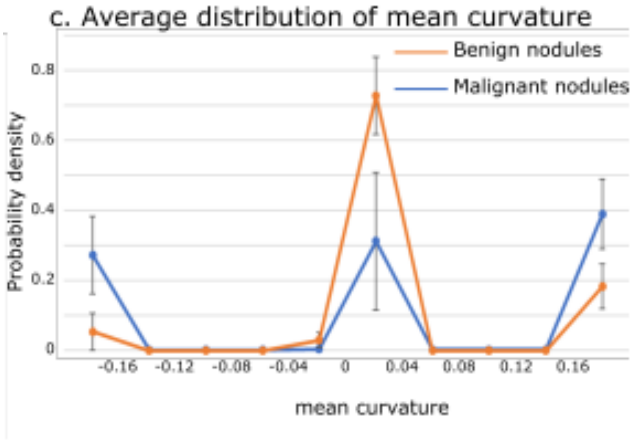
A key characterization feature for Lung Nodules

- Encoding **local nodule curvature**





- Effectively captures the **shape irregularities** (spiculations)



- Published and presented at **ESMO and MICCAI 2022**

Conclusion & Future Work

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iBiopsy®

iBiopsy® Lung Cancer Screening is an AI/ML tech-based SaMD that has shown very promising results, that outperform the state of the art.

iBiopsy® LCS benefits:

- End-to-end imaging workflow support,
- Early pulmonary nodules identification leading to early treatment,
- False positive and false negative reduction,
- Unnecessary invasive procedure & healthcare spending reduction.

iBiopsy® currently focuses on Lung Cancer Screening (LCS) & Incidental pulmonary nodules (IPN), Liver cancer (HCC), and Non- Alcoholic Steato Hepatitis (NASH) fibrosis diagnosis and scoring.

iBiopsy® LCS 510(k) FDA clearance expected by first half 2024

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Our Core Values

Leading innovation with purpose
Combine the spirit of innovation with our passion and conviction to help cure cancer and other debilitating diseases.

Committing to quality in all we do
Be dedicated to quality in everything we do. Quality begins with us and we are committed to it.

Supporting our customers in achieving their goals
Listen to the needs of our customers and help make their goals our goals through our innovation, imaging expertise, superior services, and quality solutions.

Putting the patient first
There is a person at the other end of the images we analyze who is counting on us to do everything we can to help make them healthier.

ALMDT
EURONEXT
GROWTH