Personalized Future Lung Cancer Risk Assessment from a Single LDCT: The Sybil Machine Learning Algorithm

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The Problems of the grasp and reach of LCS

Lung Cancer Screening USA 2023: Population-Level Access and Effectiveness Challenges!

Need to improve our assessment of individual RISK
Sybil: Individualized Future Cancer Risk

> 44K LDCT exams from 15K subjects in NLST trial

Key Advantages
• No image annotation
• No clinical data needed
• Instant readouts
• Multi-year future risk stratification from single CT
• Accurate near-term risk stratification also

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What is Sybil Seeing?

69-year-old male with 99 pack-year smoking hx

Baseline scan read by radiologist as “negative screen, minor abnormalities not suspicious for lung cancer”

Sybil placed scan in 75% risk percentile (6-year risk)

Sybil “attention map” (note this is not a PET scan)
What is Sybil Seeing?

• The following year, a worrisome nodule appeared in the location Sybil was focused on for risk assessment.
• Pt had surgery for a 2.2 cm poorly-differentiated squamous cell lung cancer (pT1cN0)

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Sybil “attention map”
(not a PET scan)