Artificial Intelligence and the Future of Radiology

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Future of Radiology

- Radiologists look at images
- AI looks at images
- AI is pretty good, getting better
- AI doesn't get tired, take vacations, etc

- What does this mean for radiologists?

Geoffrey Hinton, PhD

"It's just completely obvious that in five years deep learning is going to do better than radiologists."

"They should stop training radiologists now."

all tech considered   TECH, CULTURE AND CONNECTION

Scanning The Future, Radiologists See Their Jobs At Risk

September 4, 2017 · 4:50 PM ET
Heard on All Things Considered

4:41

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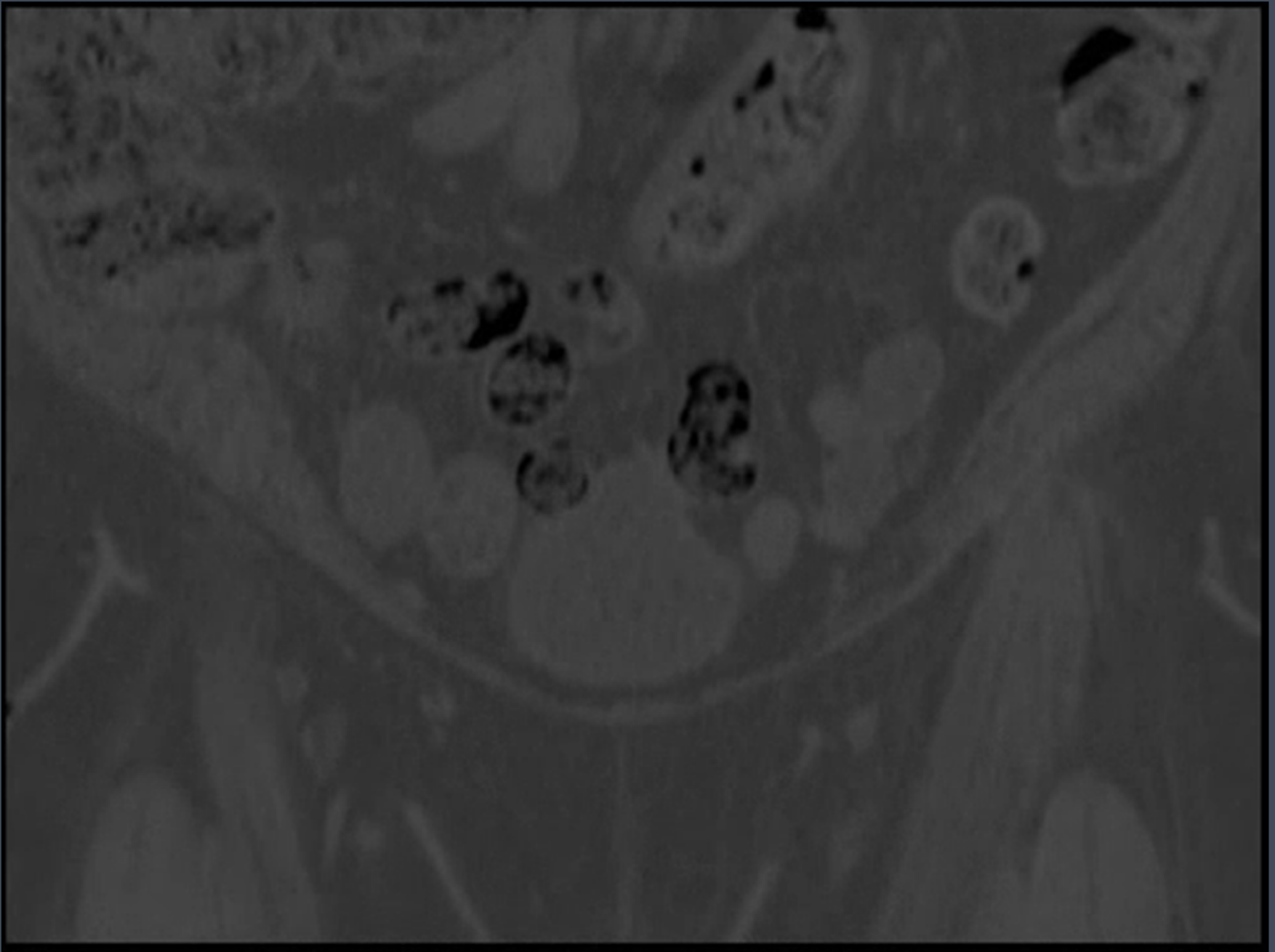Transcript

LAUREN SILVERMAN   FROM   KERA

Why am I not panicking?

- People predicting the end of radiology don't understand radiology very well
  - Radiology is not just perceptual
- Radiologists are physicians who specialize in using technology to make diagnoses
- AI is getting good at some perceptual tasks
- *AI is a long way from the cognitive task of diagnosis of the full range of human disease*

History of new technology: CT

- CT "does better than radiologists" at evaluating 3D structures

- CT dramatically increased diagnostic power of radiology
- CT added new complexities

- CT created a huge demand for radiologists

"The role of radiologists will evolve from doing perceptual things ... to doing far more cognitive things."

Geoffrey Hinton, PhD

AI in medicine

- AI not ready to *replace* physicians
- AI will soon assist with some tasks
  - e.g. perceptual tasks in imaging

- Future of radiology is improved diagnosis delivered by human radiologists working with AI

Implications for AI development

R____NG RADI____S

- H____do___k and wha_____p with min_____t
- AI s_____central r_____
- ____gists h____r, _____ary role training datasets

Implications for AI development

REPLACING RADIOLOGISTS

- How radiologists work and what they need help with minimally relevant

- AI specialists have central role

- Radiologists have minor, temporary role creating training datasets

ASSISTING RADIOLOGISTS

- Tools need to be tailored to effectively and efficiently assisting radiologists

- AI specialists essential for making AI accurate

- Radiologists have major, ongoing role in directing AI development

AI development in academia

- Experience with cross-discipline collaboration
- Radiologists and other medical specialists
- Large volumes of data
- Ideal environment for implementation

- Collaboration with industry for commercialization

Requirements for AI development

- Research time for physicians
- Data engineers and data management infrastructrure
- Data scientists
- Compute infrastructure

Key points

- Future of radiology looks bright for patients and radiologists

- Expect that radiologists will be routinely using AI-based tools in next few years

- Academic medical centers are an ideal environment for bringing together elements needed to realize potential of AI