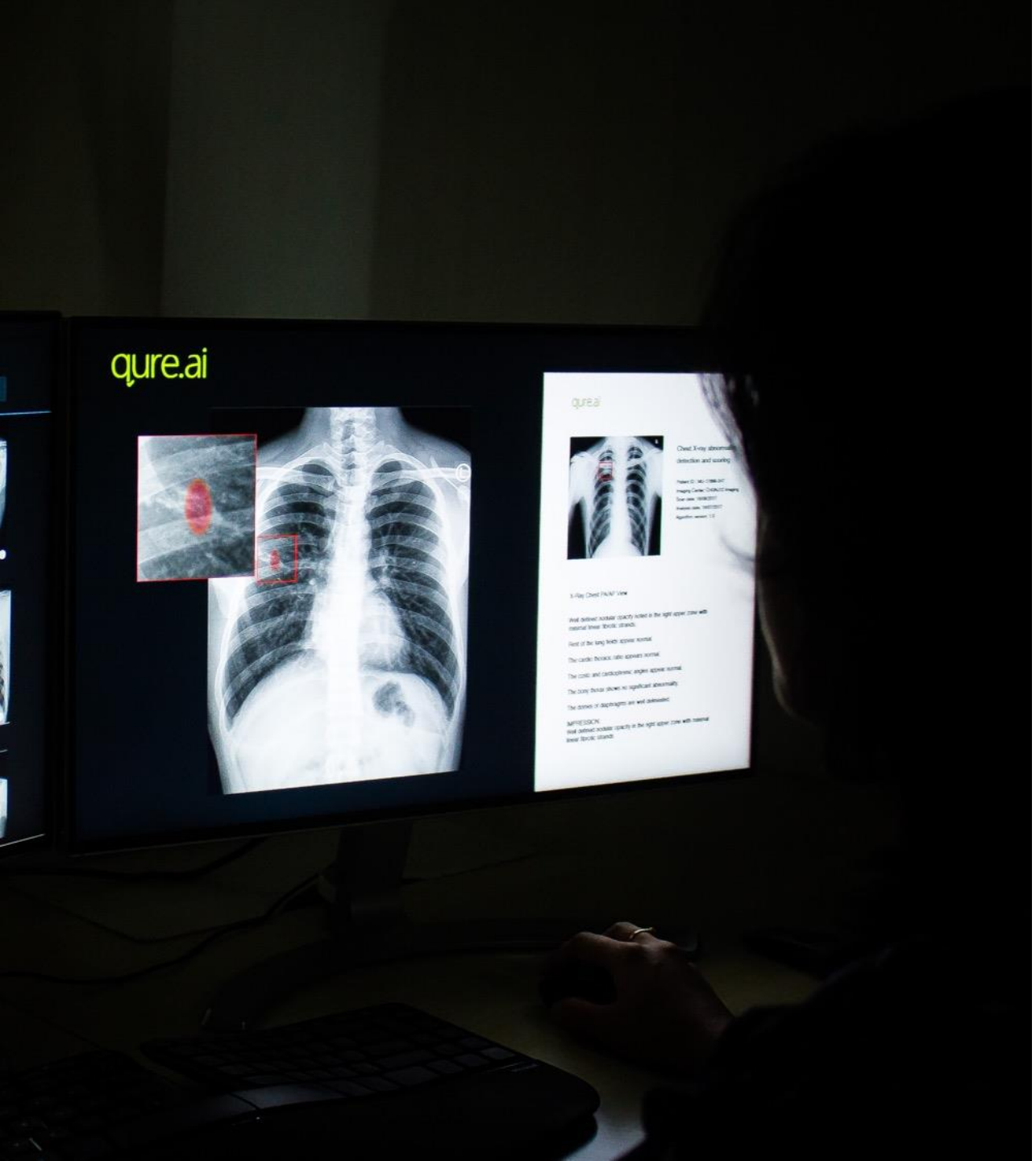


Qure.ai

Deep Learning for Radiology

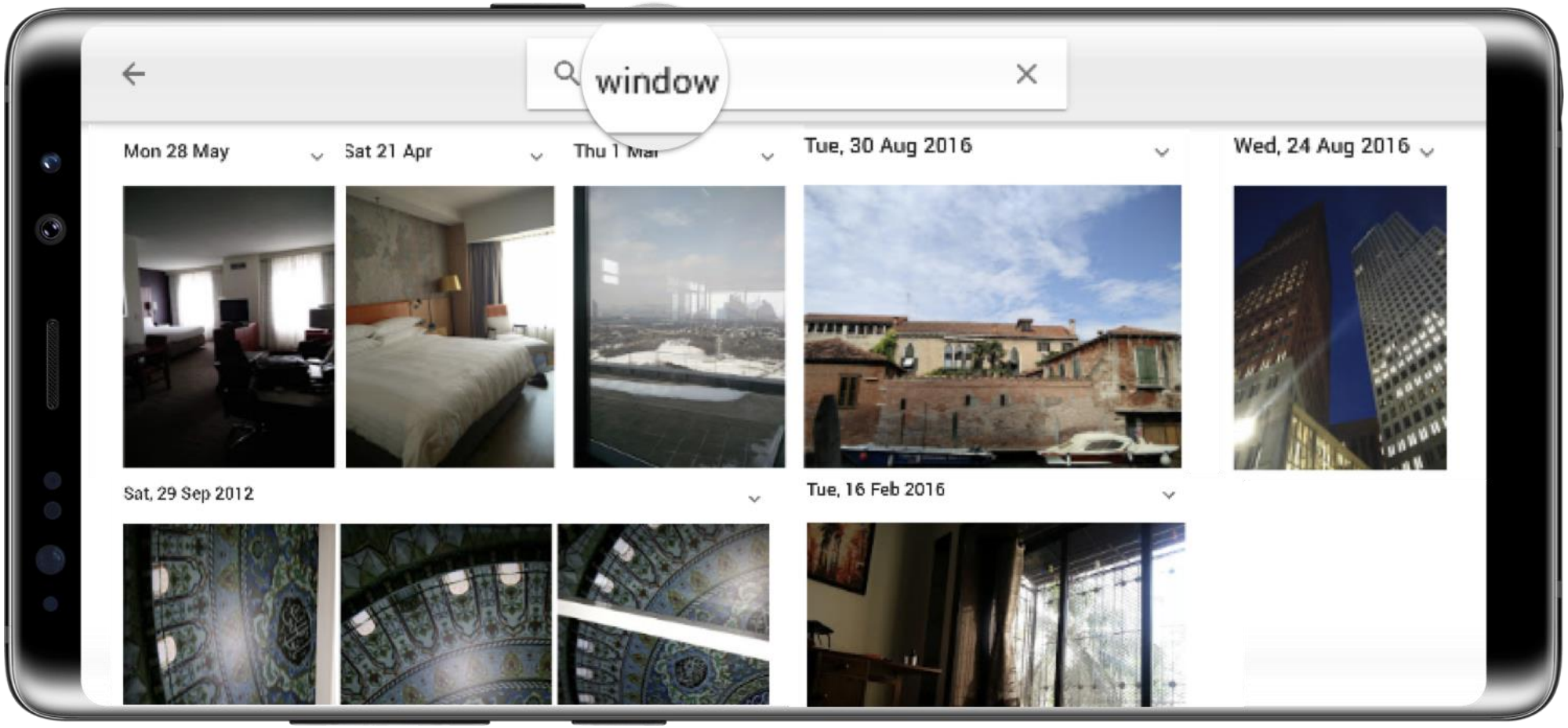
Pooja Rao
Research and Development Head
@_poojarao

Nov 12, 2019

1 Radiologist

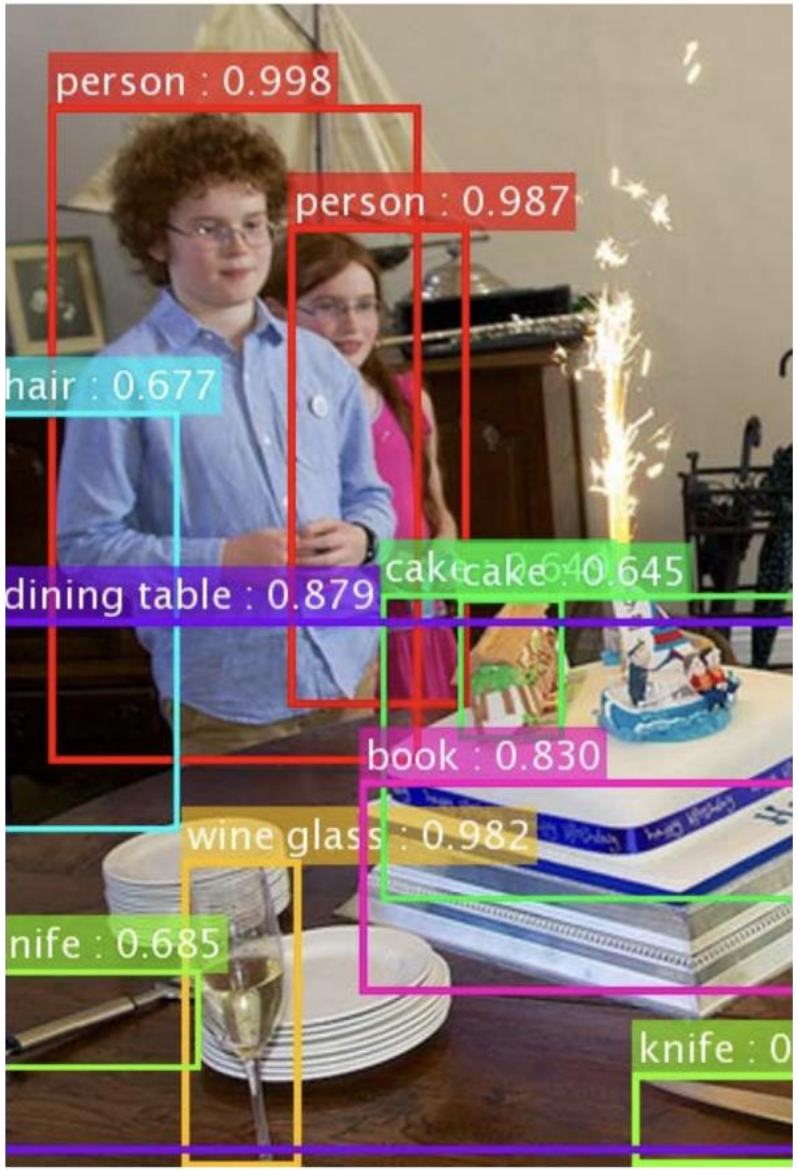
10,000 - Sweden
100,000 - India
200,000 - Kenya

COMPUTERS HAVE LEARNED TO UNDERSTAND IMAGES



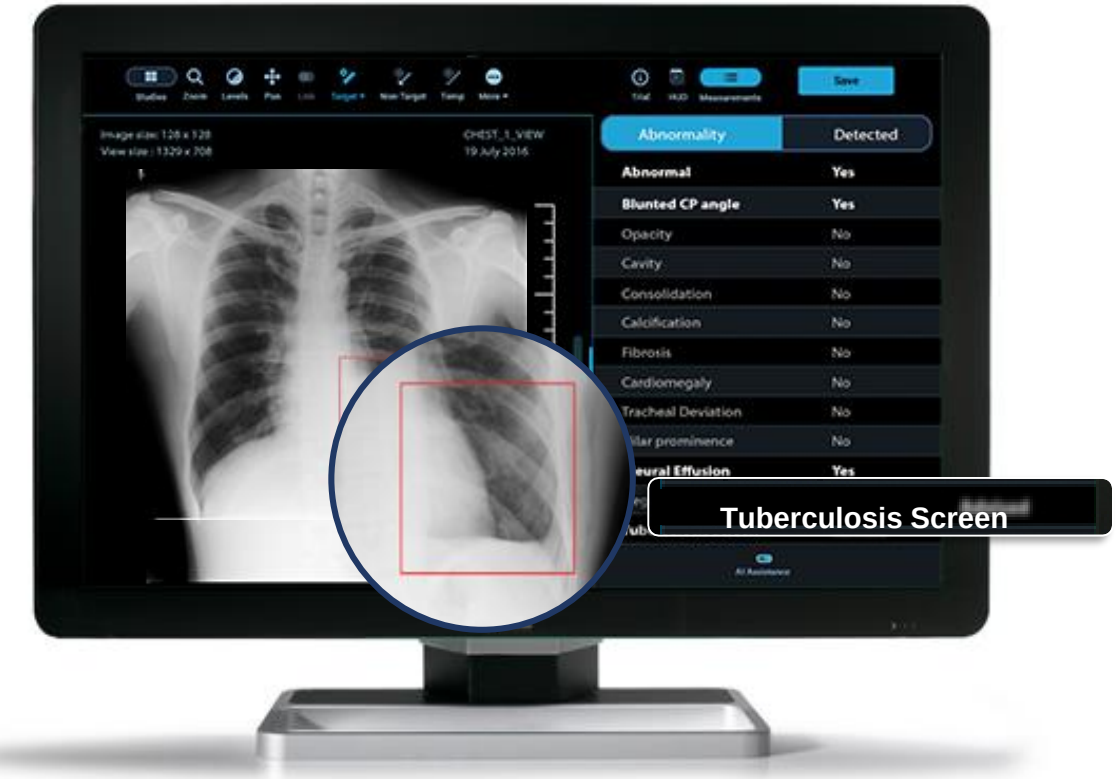
Automated detection of personal photographs showing a window or windows, searching image by the content of the image, low-light quality images

They can detect and localize multiple objects in images, even when partially obscured.



We applied the same technology to image-heavy medical specialties

Screen for Tuberculosis



qXR

Worklist Triaging

Identifies and Quantifies Bleeds

qER

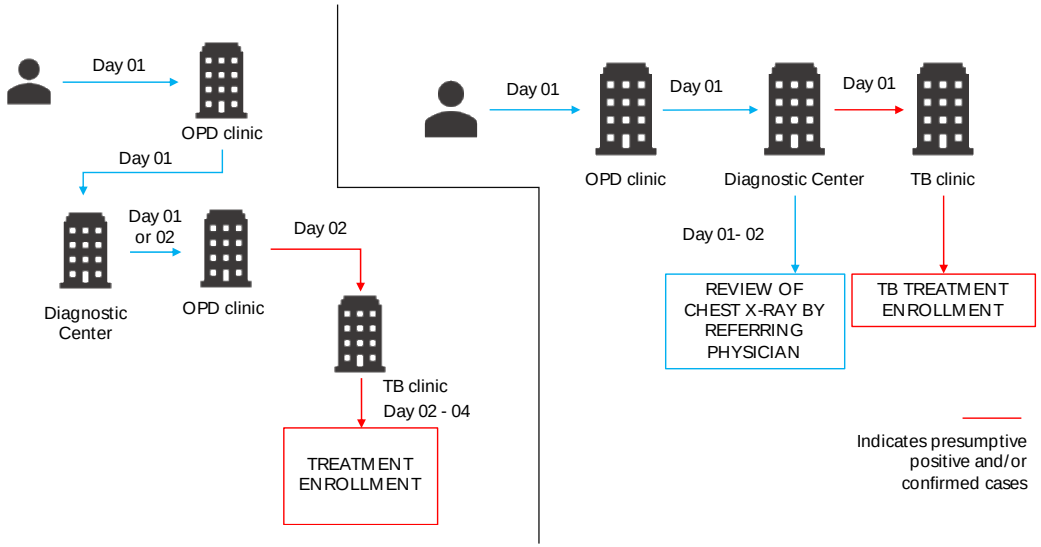
Classify normal and abnormal scans

Highlight the abnormal regions

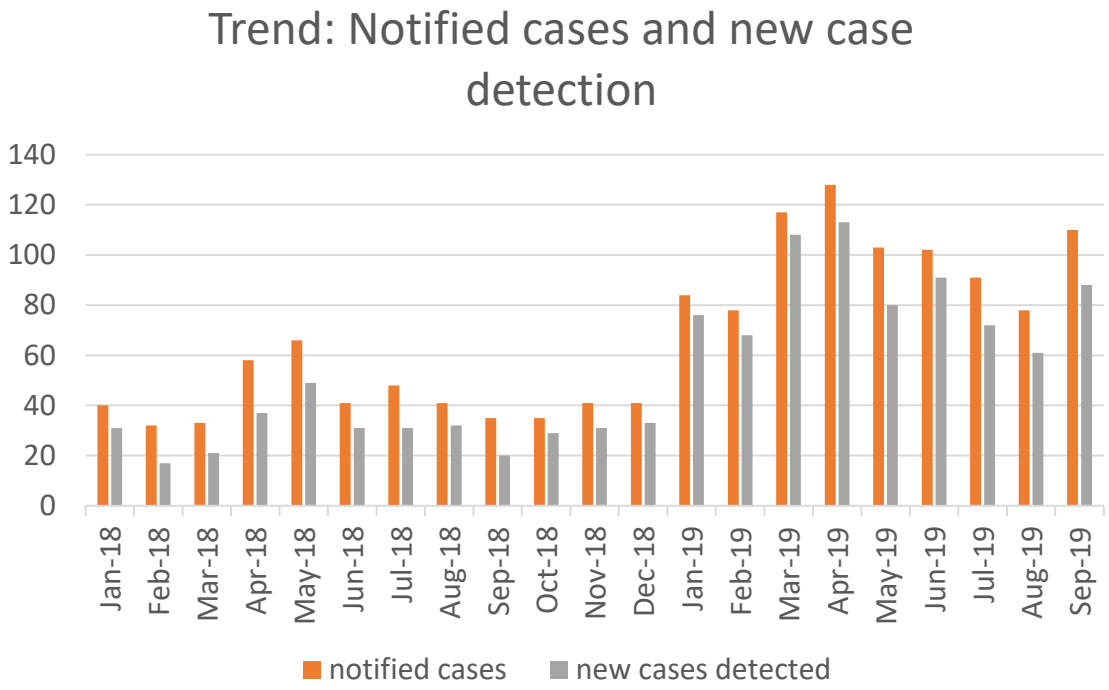
Tuberculosis screening with Qure.ai

NITI Aayog aspirational district
BARAN; 1.22 Million population

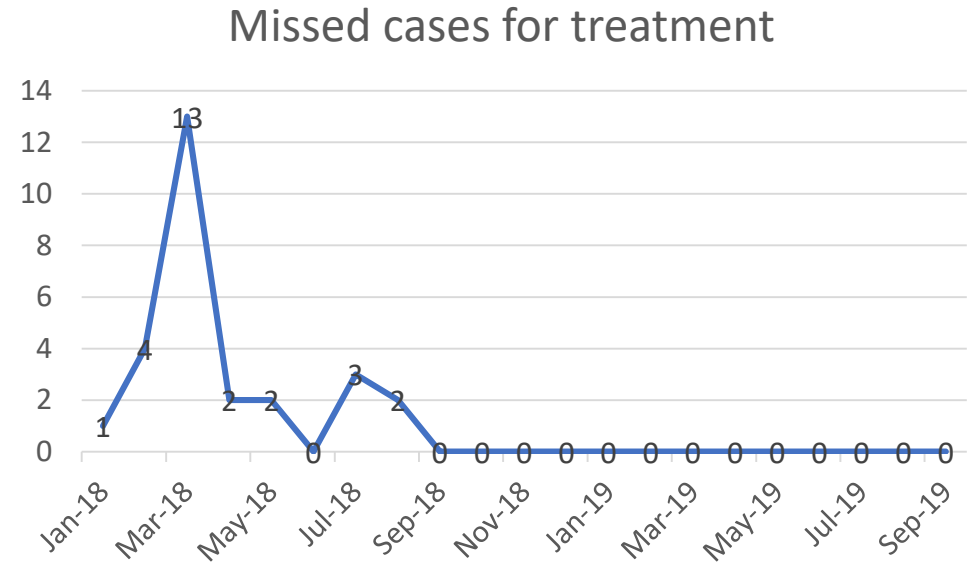
Caters to 7 TB units and 65+ PHI;
Average 27 chest x-rays per day



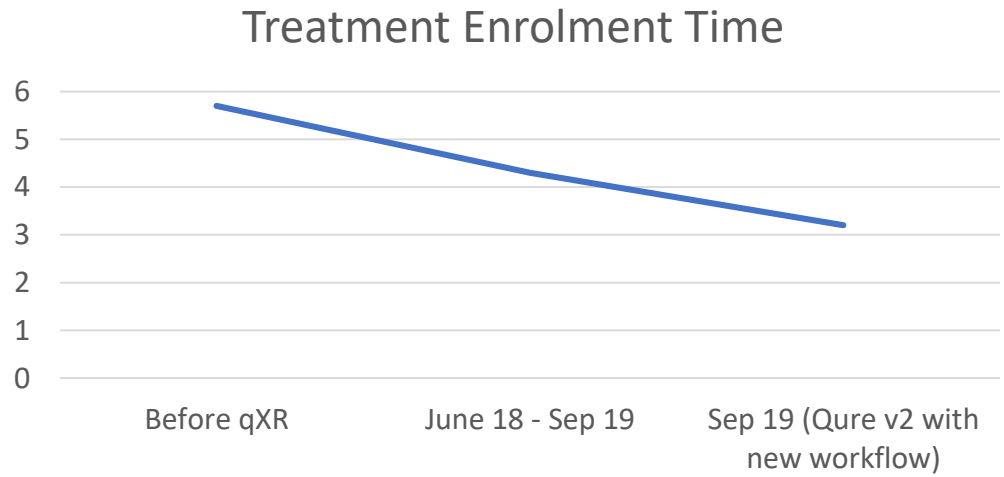
IMPACT



12.1% INCREASE IN NEW CASES DETECTED



REDUCTION IN PATIENT DROP-OUT AND HIGH TURN OUT ON TREATMENT ENROLMENT



DRASTIC REDUCTION IN TREATMENT ENROLMENT TIME.

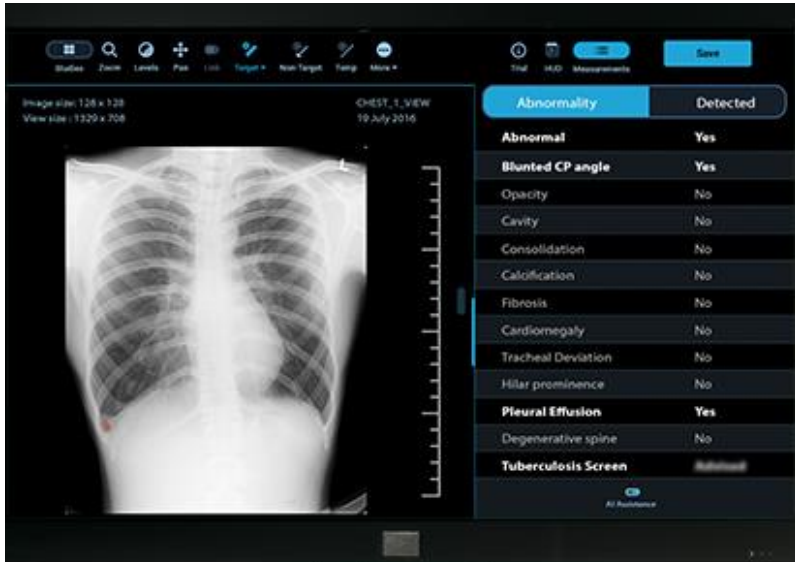
IMPACT

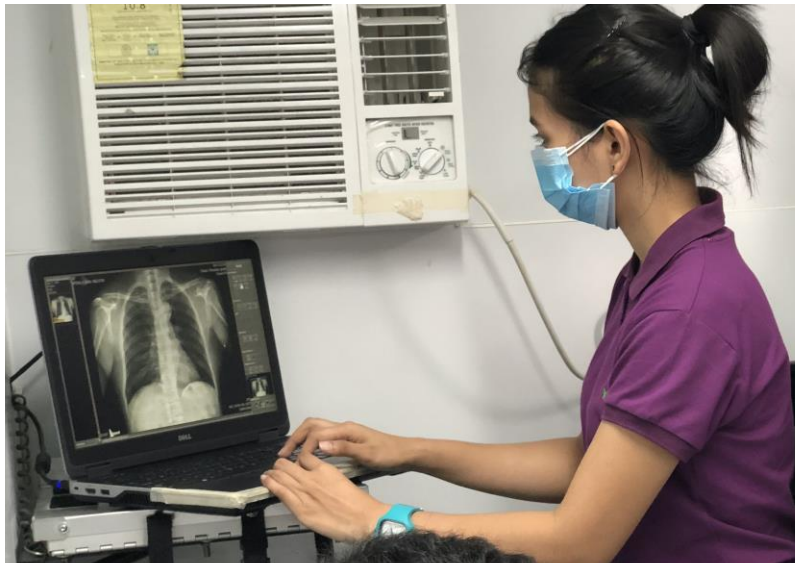
28,000+
individuals screened

25%
More TB cases identified, missed by the Radiologist

1 day
Time to diagnosis from 2 weeks

> 0.95
AUC



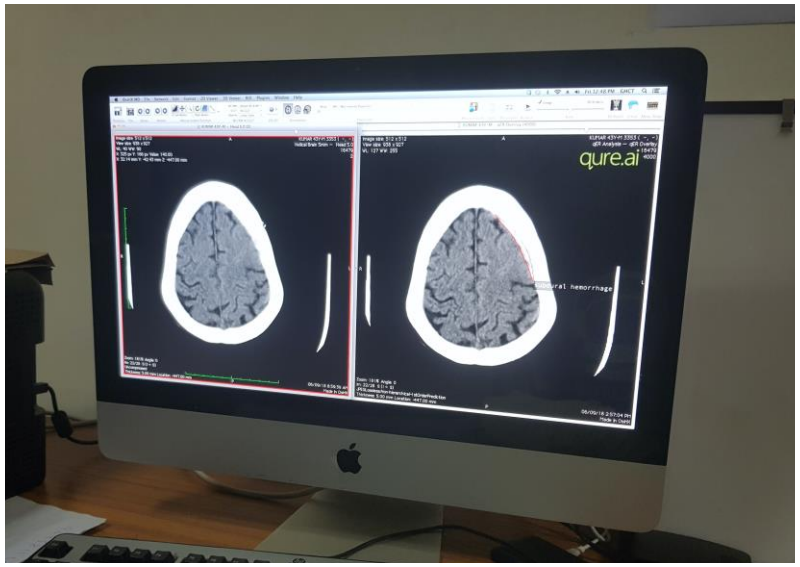


CT SCANS

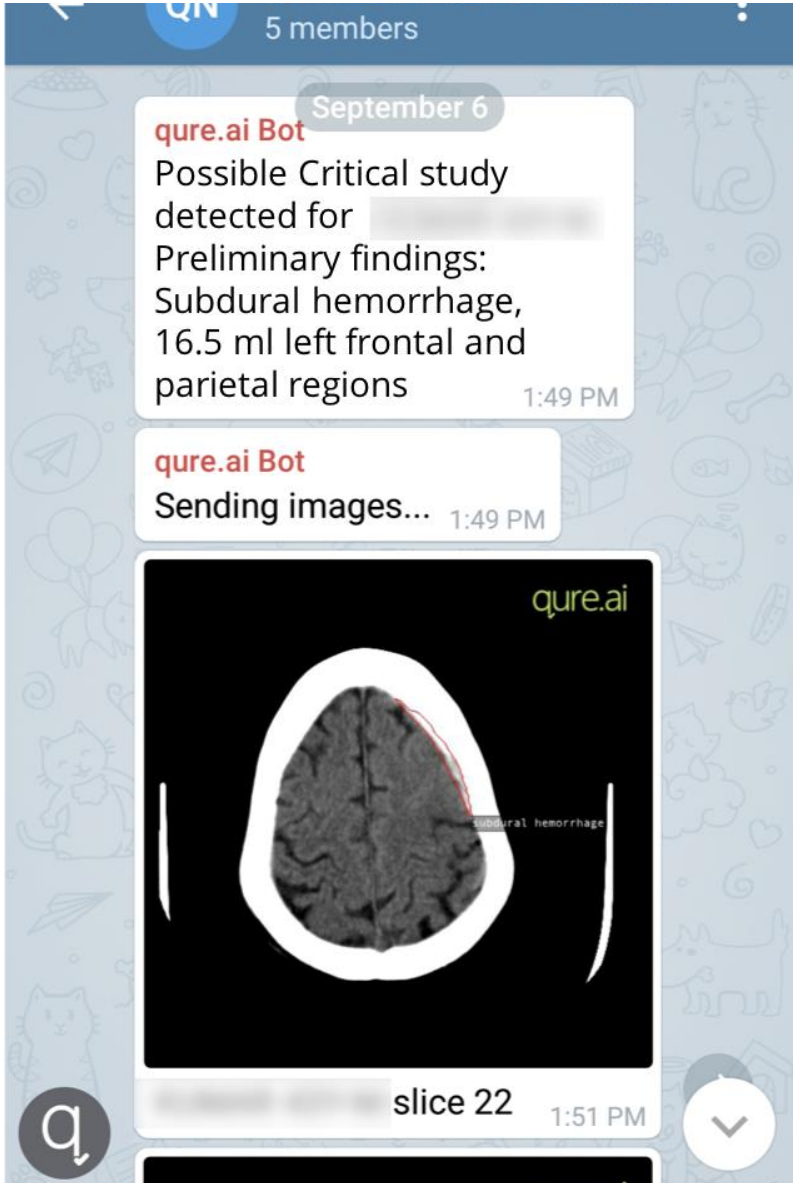
Critical scans alerted through Telegram messages alert clinicians

37 minutes
time saved per scan

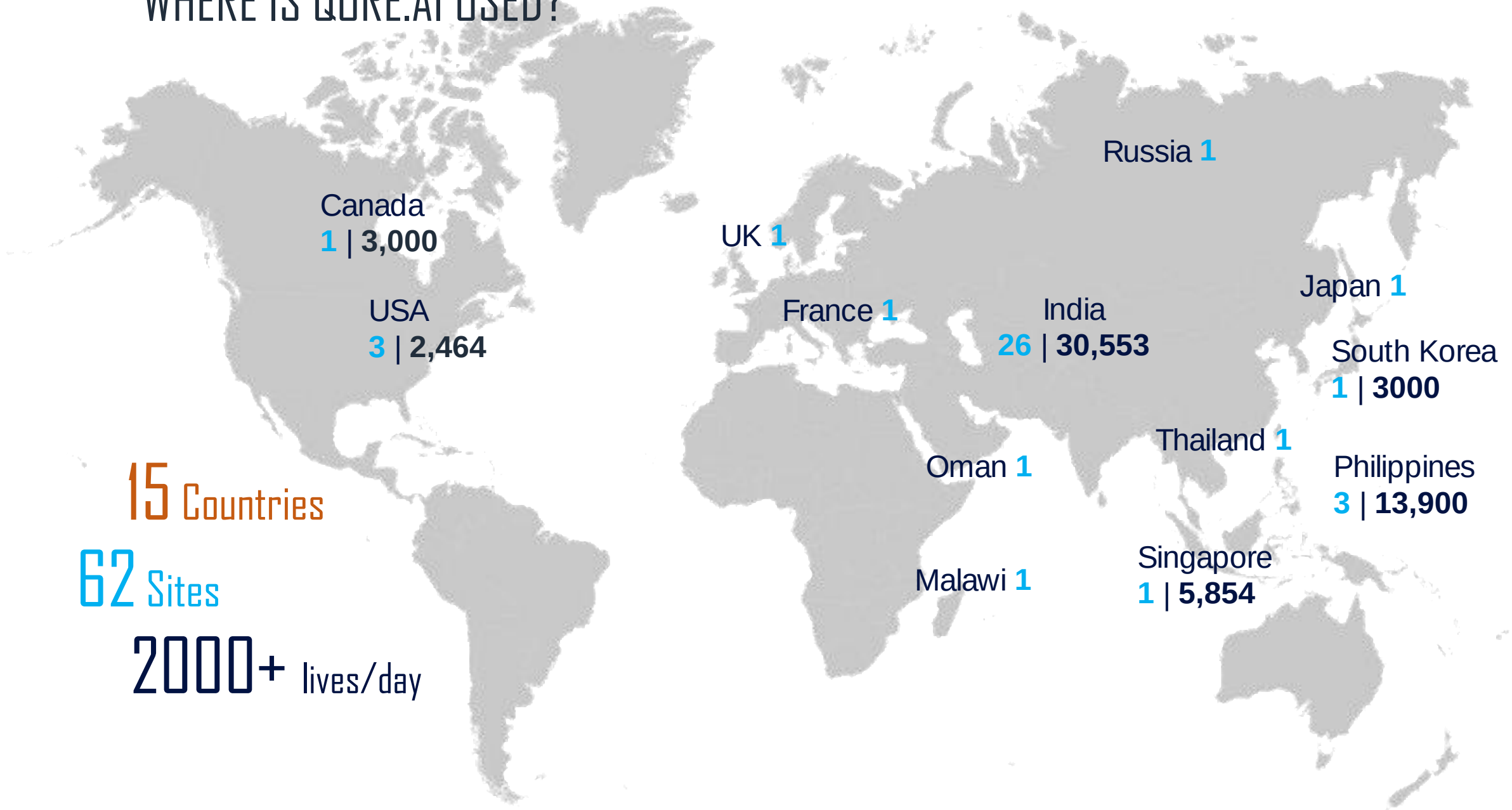
> 0.95
AUC



Tatyana Mcqueen		0	Dec 1, 2006	MR	IRM cérébrale, neuro-crâne
Tora Zuniga		48199	Jul 2, 2015	CT	CT BRAIN PLAIN
Madalene Camp		48198	Feb 20, 2015	CT	BWH CT CHEST W CONTRAST CT005
Iola Parent		48197	Feb 20, 2015	CT\PT	DFCI PET CT STANDARD 77029 77029
Etha Bogan		48196	Feb 20, 2015	CT	CT BRAIN PLAIN
Sindy Bottoms		48195	Dec 24, 2014	CT	CT BRAIN PLAIN
Lynell Mays		48194	Dec 24, 2014	CT	BWH CT CHEST W CONTRAST CT005
Stephane Morse		48193	Dec 24, 2014	CT	CT BRAIN PLAIN
Amina Sands		48192	Dec 24, 2014	CT	BWH CT ABDOMEN PELVIS W CONTRAST CT192
Leena Dejesus		481914	Oct 26, 2015	CT	CT BRAIN PLAIN
Bernardina Knowlton		481913	Oct 26, 2015	CT	CT ABDOMEN PELVIS W CONTRAST
Leota Bills		481912	Jul 2, 2015	CT\PT	PET CT BODY OTHER RESEARCH
Branden Schwarz		481911	Jul 2, 2015	CT	CT BRAIN PLAIN
Erline Fuqua		481910	Jul 2, 2015	CT	CT ABDOMEN PELVIS W CONTRAST
Maribeth Fierro		48191	Dec 19, 2014	CT\PT	DFCI PET CT STANDARD 77029 77029
Thanh Parham		1	Jan 1, 2005	CT	CT BRAIN PLAIN
Floy Prescott		15589	Dec 12, 2014	CT	CT BRAIN PLAIN
Reed Pappas		15588	Aug 5, 2014	CT	CT BRAIN PLAIN
Chan Laster		15587	Aug 5, 2014	CT\PT	PETCT
Leigh Falls		15586	Aug 5, 2014	CT	CT BRAIN PLAIN
Leighann Gillis		15585	Aug 5, 2014	CT	PETCTAW
Arlie Mclemore		15584	May 30, 2014	CT	PETCTCW
Marquitta Flaherty		15583	May 30, 2014	CT	PETCT



WHERE IS QURE.AI USED?



15 Countries

62 Sites

2000+ lives/day

CHALLENGES

- Some doctors feel threatened by AI
- Lack of internet access and computing availability
- Lack of basic electronic health record systems before TB notification

qure.ai

qure.ai
DEEP LEARNING. DEPLOYED .
2000+ Lives, a day
62 Sites
15 Countries