Going Beyond 'AI Detects Disease X From Y Data'

Oguzhan Gencoglu - Cofounder & Head of AI at Top Data Science

HIMSS Eurasia 2019

TOP DATA SCIENCE

Helsinki, Finland

20 AI scientists

60+ AI projects

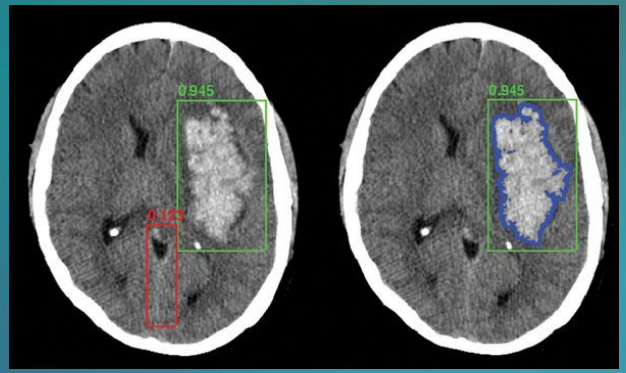
AI as a Service

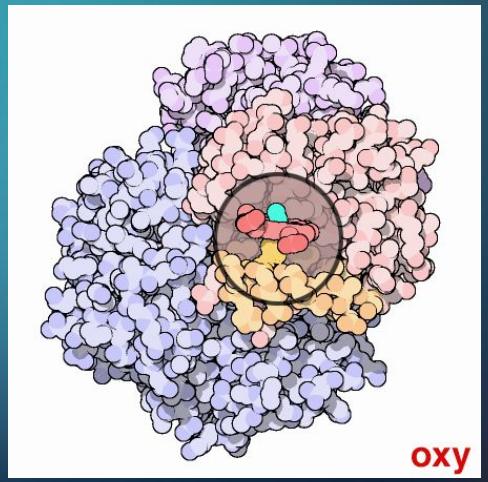
AI APPLIED
TO A
HEALTHCARE CASE

AI COMPARED
TO DOMAIN EXPERTS

RANDOMIZED CONTROL TRIALS
OF AI

AI APPLIED TO A HEALTHCARE CASE





AI COMPARED TO DOMAIN EXPERTS

nature medicine

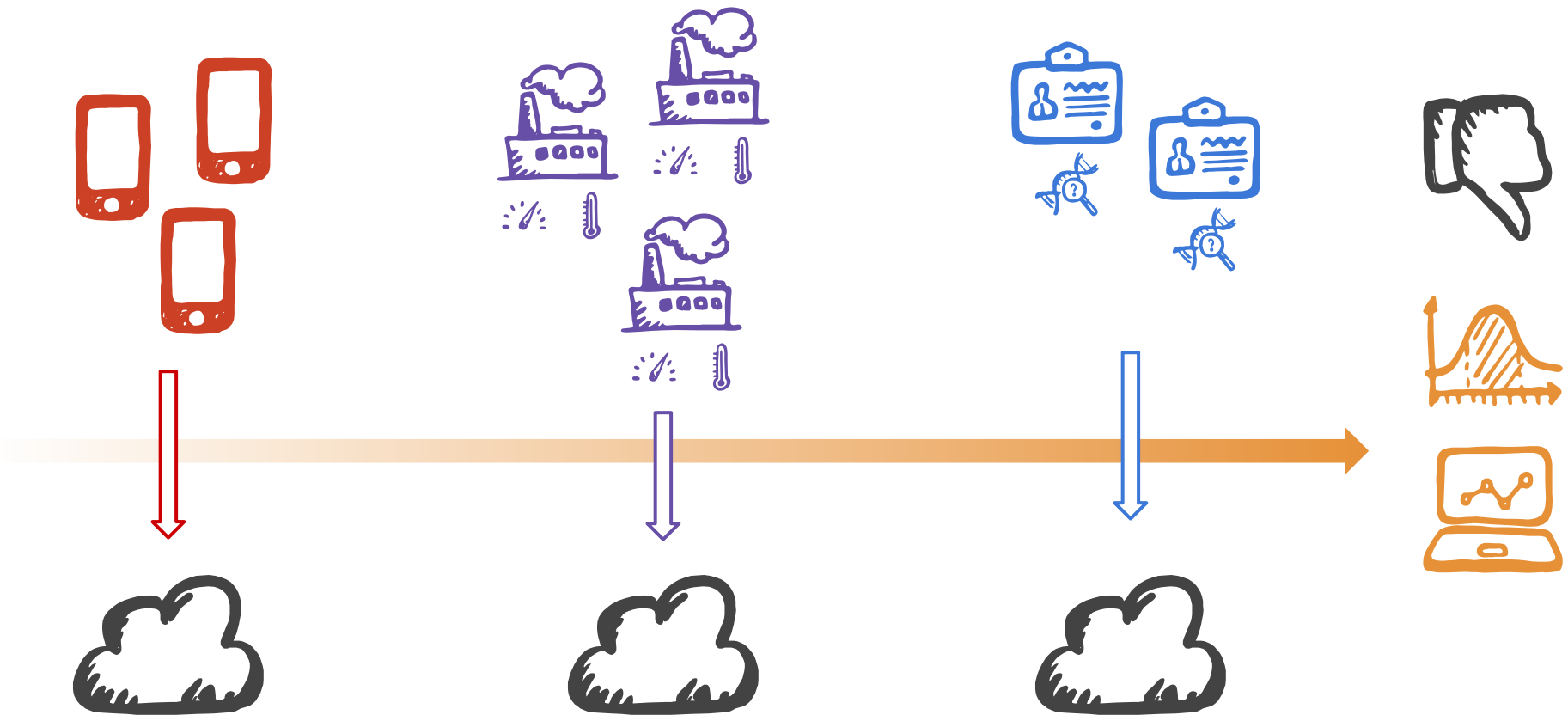
Letter | Published: 20 May 2019

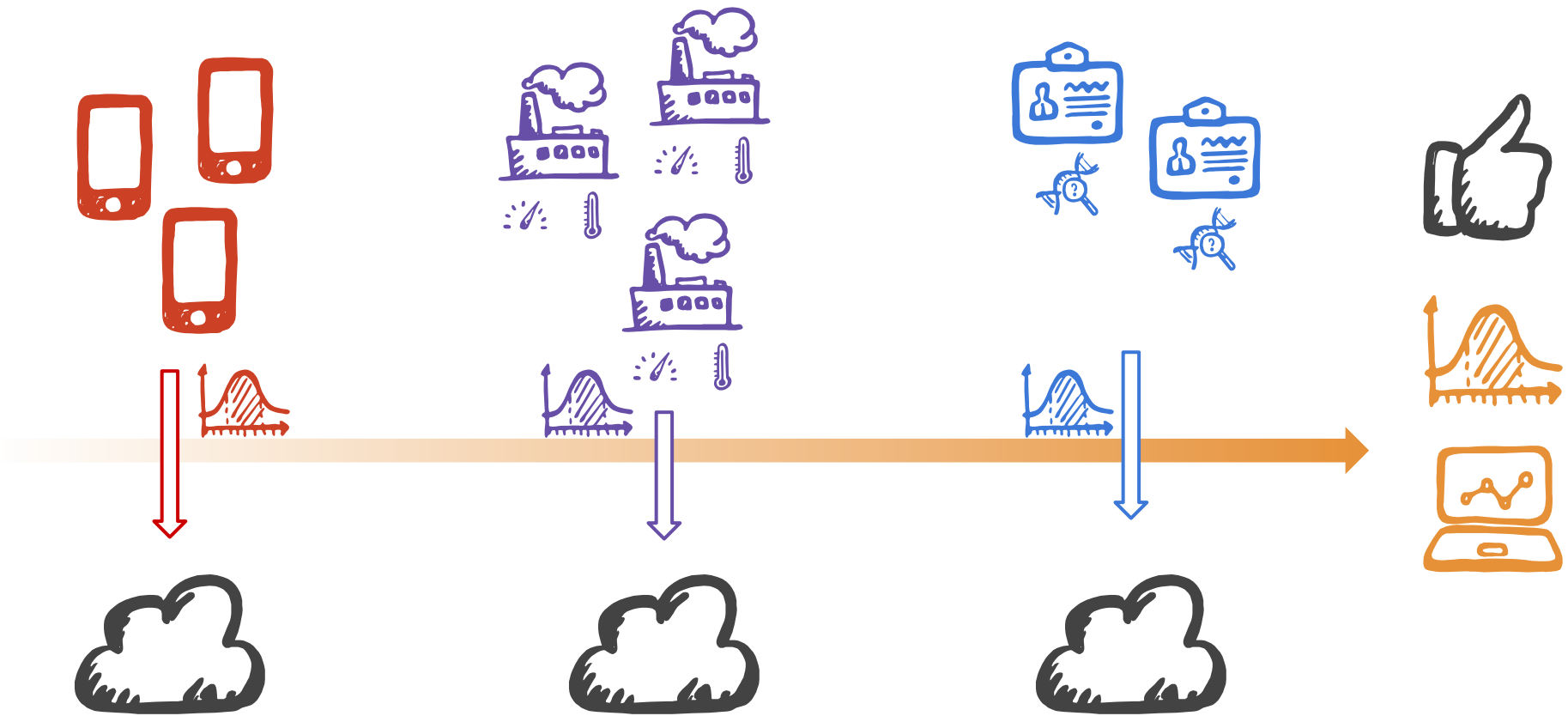
End-to-end lung cancer screening with three-dimensional deep learning on low-dose chest computed tomography

tomography imaging was not available, our model outperformed all six radiologists with absolute reductions of 11% in false positives and 5% in false negatives.

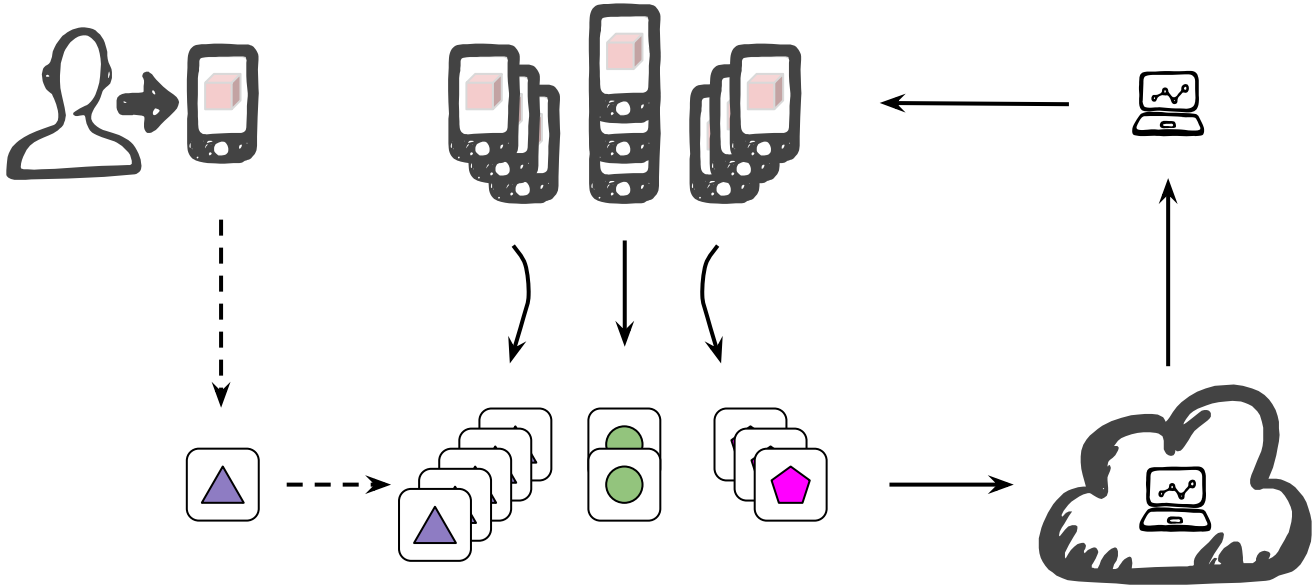
PRIVACY PRESERVING
AI

FEDERATED AI

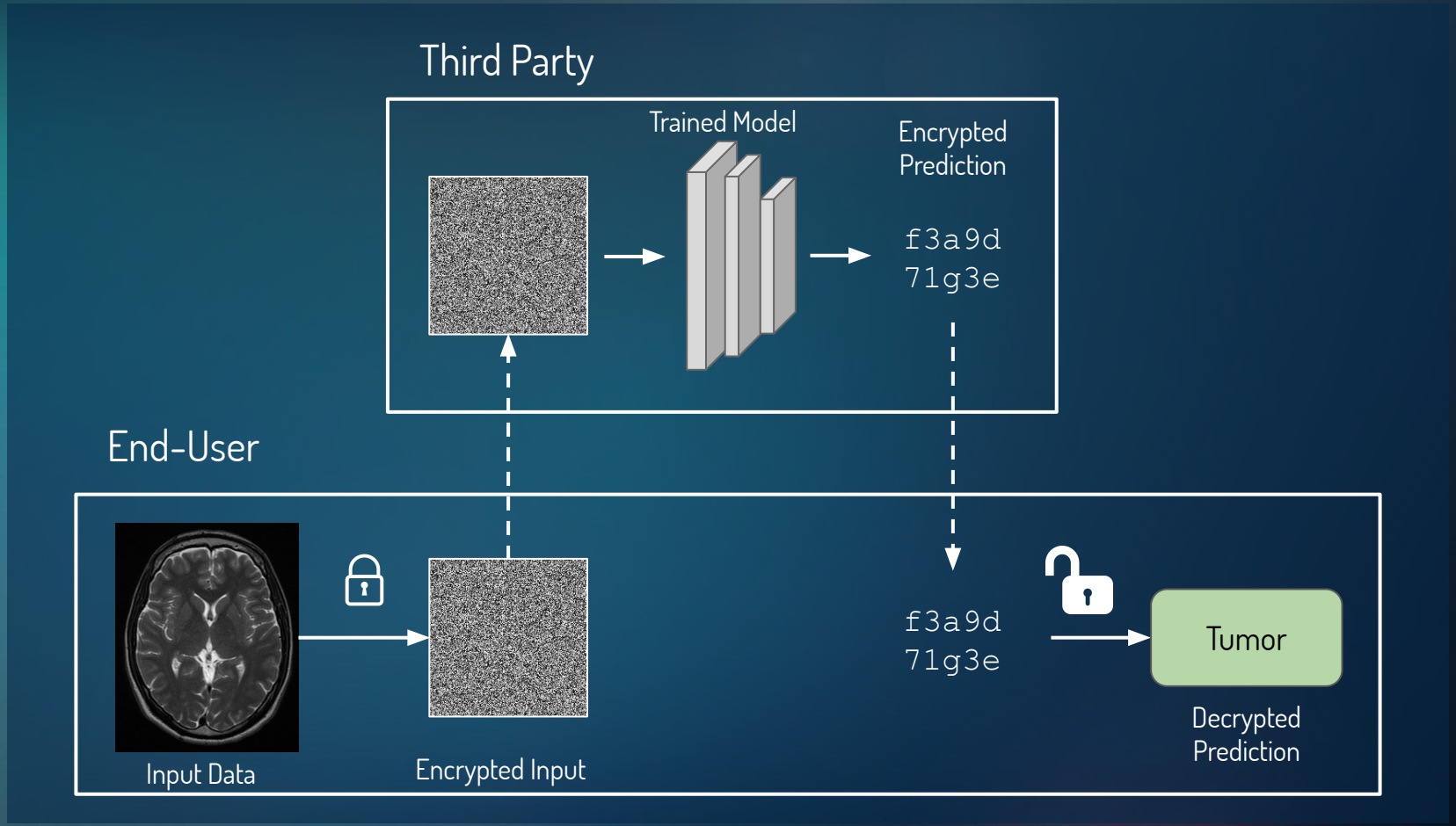




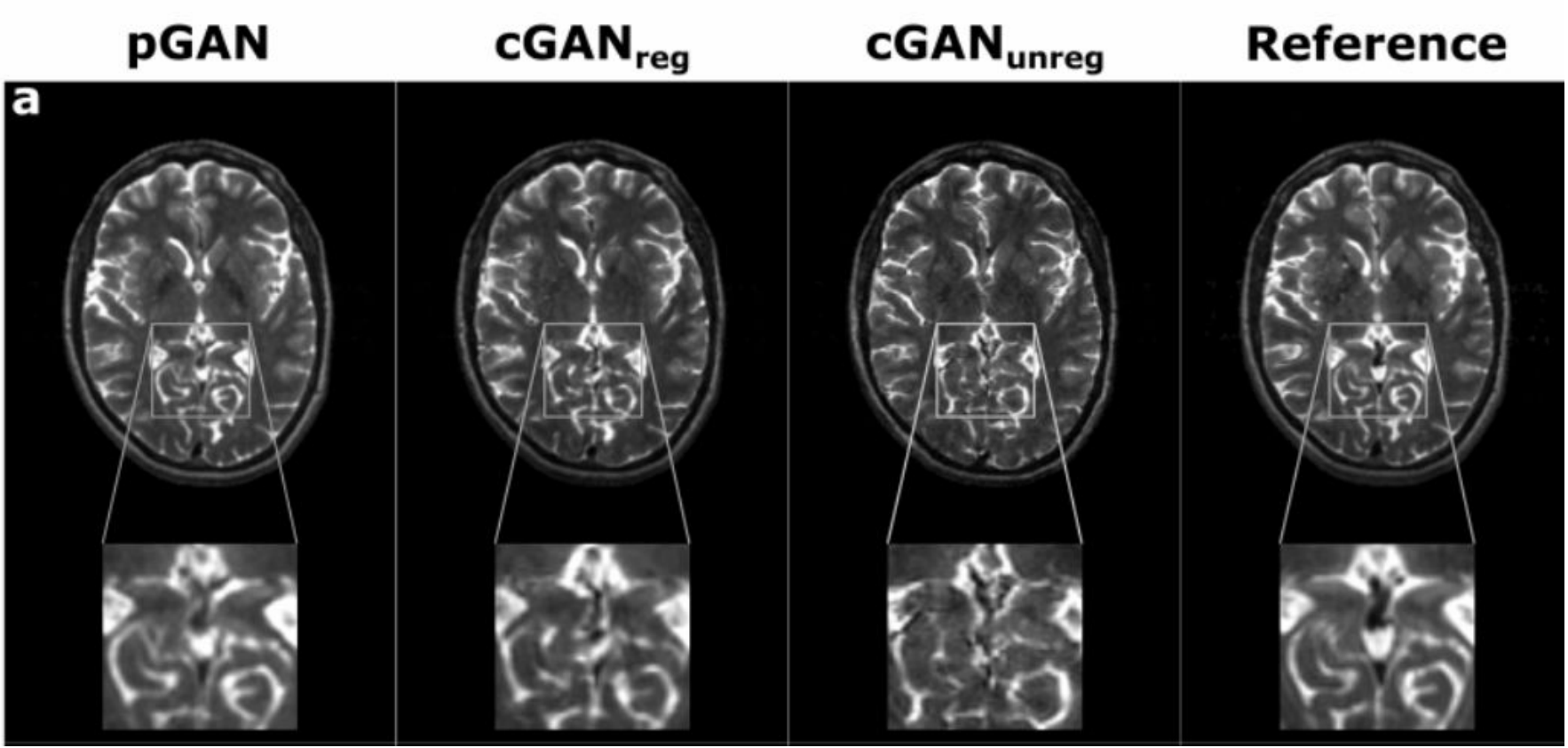
Federated Learning



AI ON ENCRYPTED DATA

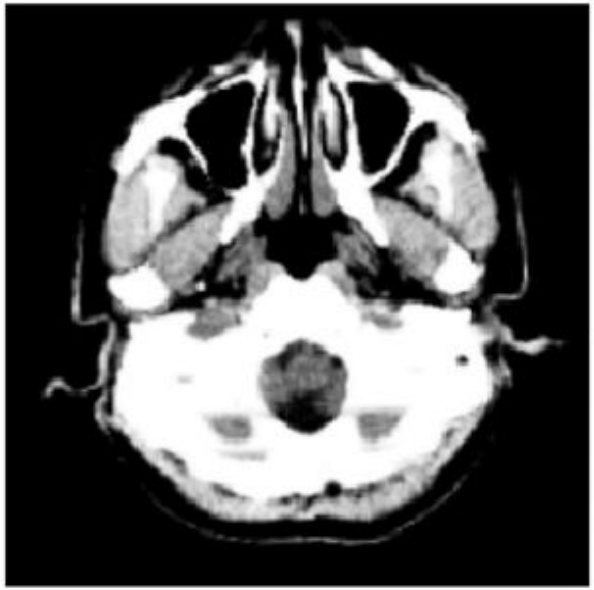

Third Party
Trained Model
Encrypted Prediction
f3a9d
71g3e
End-User
f3a9d
71g3e
Tumor
Input Data
Encrypted Input
Decrypted Prediction

GENERATING DATA WITH AI

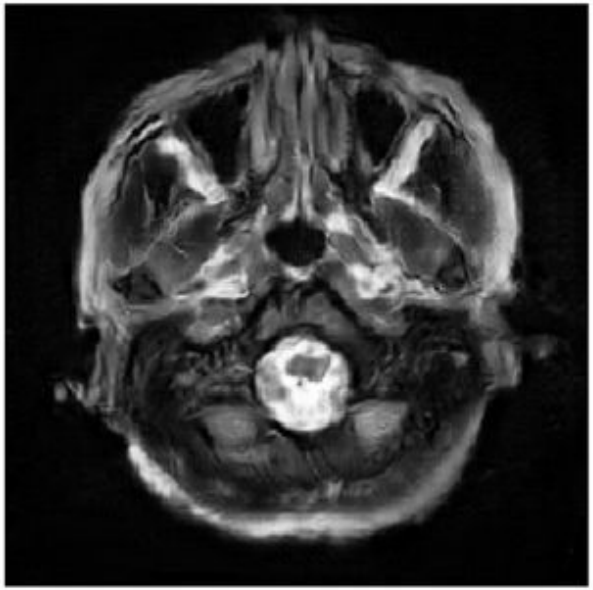


Dar *et al.*, Image synthesis in multi-contrast MRI with cGANs, 2019

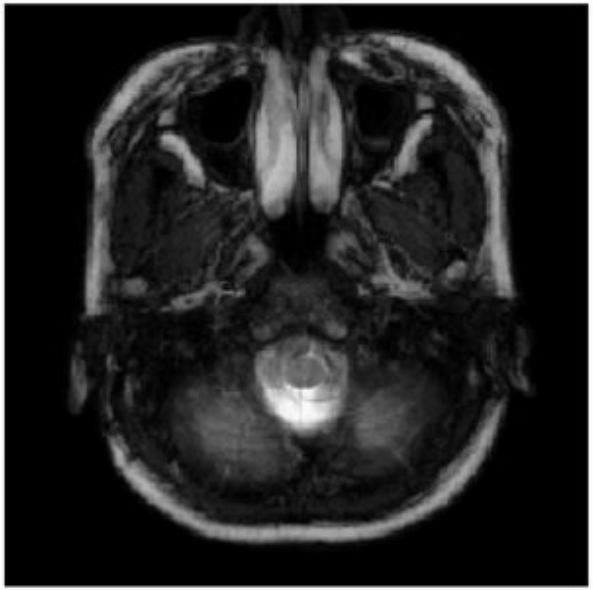
CT

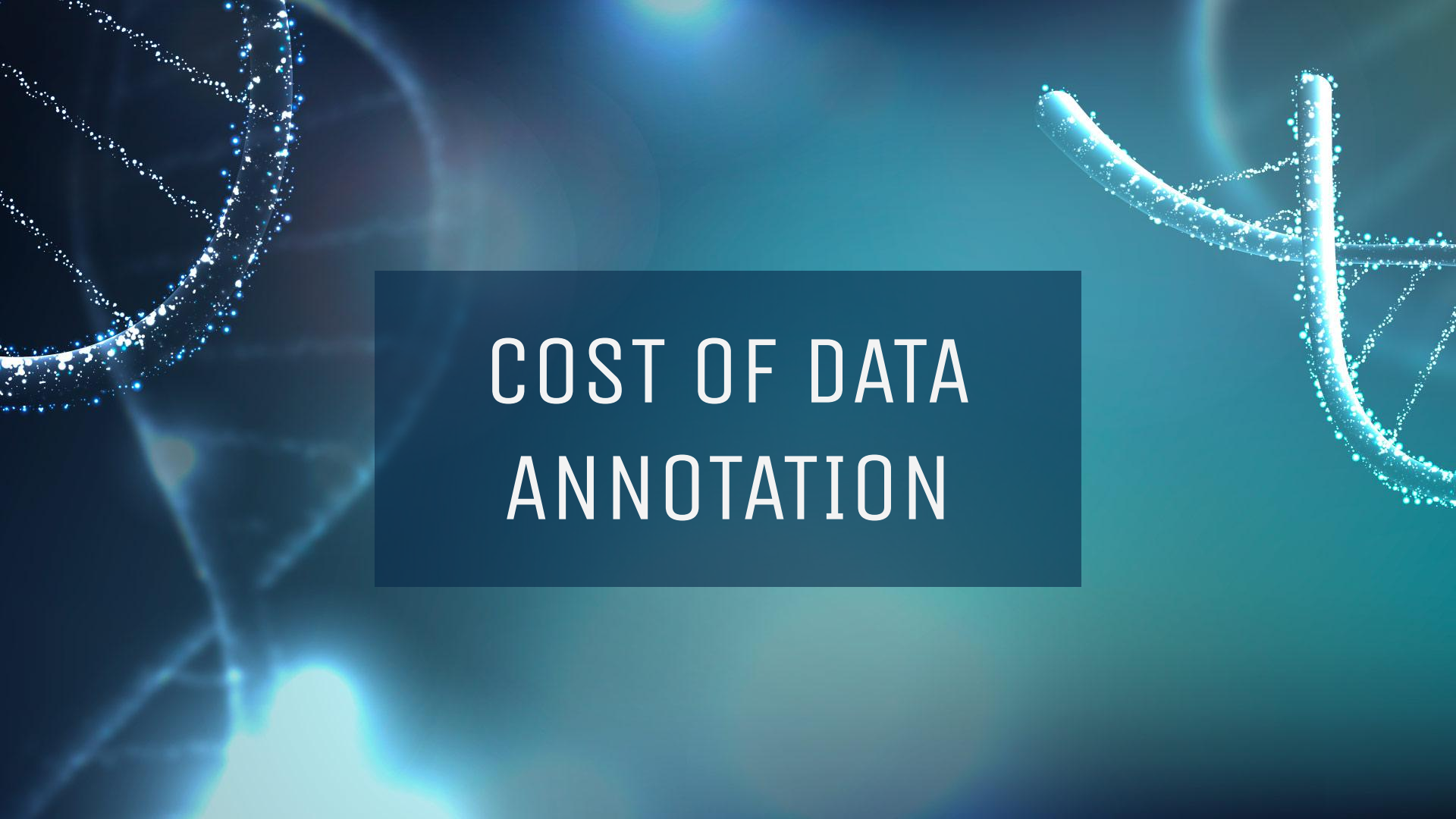


Synthesized MR



Ground Truth MR




COST OF DATA
ANNOTATION

Improving Prostate Cancer Detection with Breast Histopathology Images

Umair Akhtar Hasan Khan[1], Carolin Stürenberg[2], Oguzhan Gencoglu[1], Kevin Sandeman[3], Timo Heikkinen[1], Antti Rannikko[4], and Tuomas Mirtti[2]

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[2] University of Helsinki, Faculty of Medicine, Department of Pathology and Research Program in Systemic Oncology, Helsinki, Finland
[3] Department of Laboratory Medicine, Department of Pathology, Skåne University Hospital, Malmö, Sweden
[4] Helsinki University Hospital, Department of Urology and Research Program in Systemic Oncology, Faculty of Medicine, University of Helsinki, Helsinki, Finland

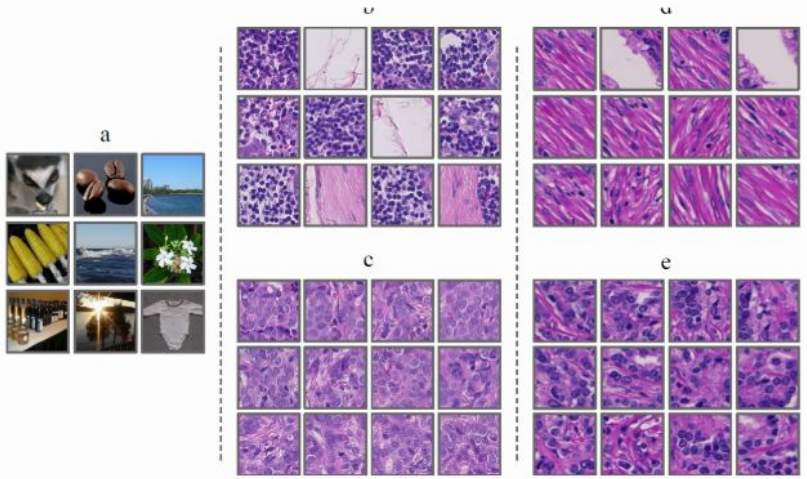
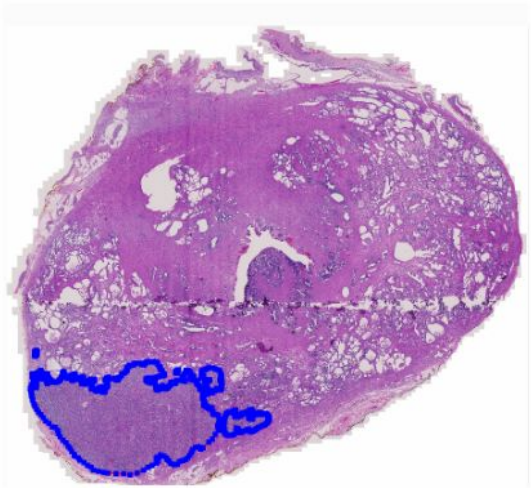
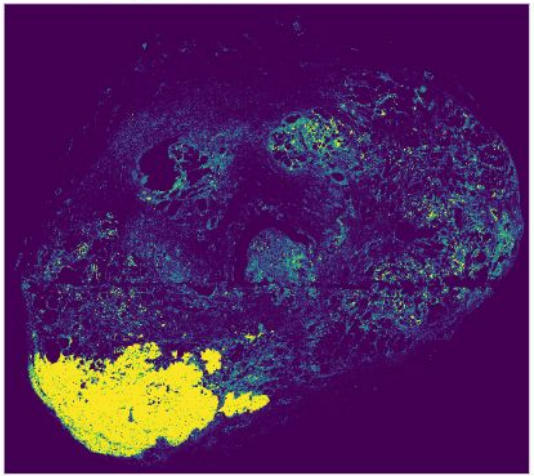


Fig. 2. Examples of data from a. ImageNet b. benign breast tissue c. cancerous breast tissue d. benign prostate tissue e. cancerous prostate tissue.





Publication: https://link.springer.com/chapter/10.1007%2F978-3-030-23937-4_11

TRANSPARENT, EXPLAINABLE & ACCOUNTABLE AI

Does your car have any idea why my car pulled it over?

THANK YOU