

AI Technology for 3D Reconstruction of Knees from X-Ray Images

Ron Soferman, CEO
RSIP Vision



ALERT

AWARENESS AND LOCALIZATION
OF EXPLOSIVES-RELATED THREATS



Global Leader in Computer
Vision and Deep Learning

Company Intro



Solutions provider - AI and
computer vision for
Industrial Applications



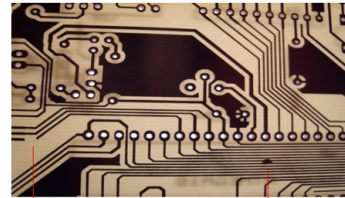
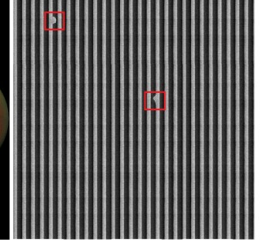
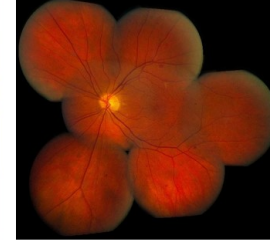
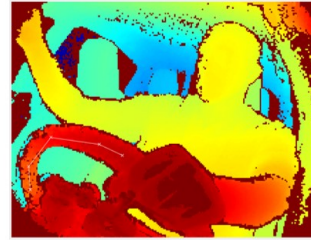
Customized for project needs



Experienced team of
50 engineers (PhD/MSc)

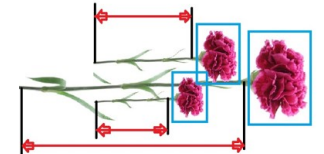
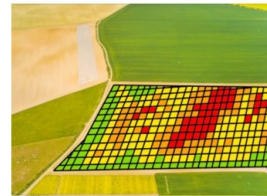
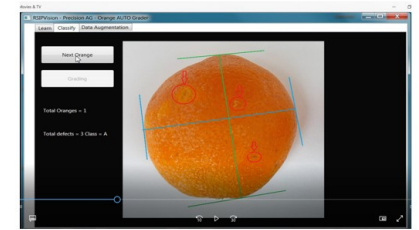


Over **25 years** in the field

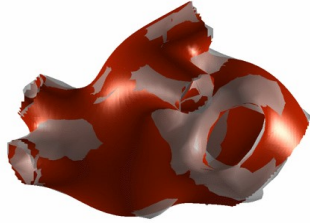


Line Breaks

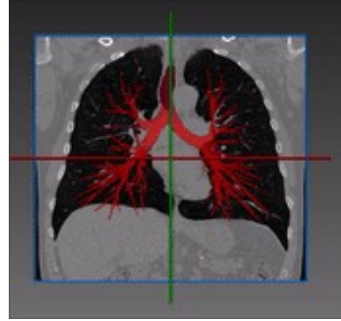
Dirt / Shortage



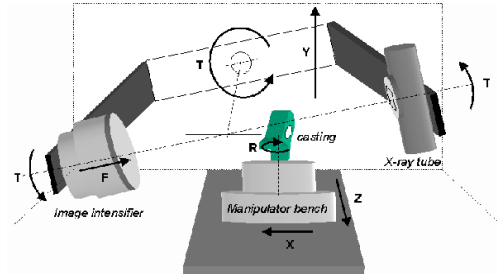
3D In Medical Area



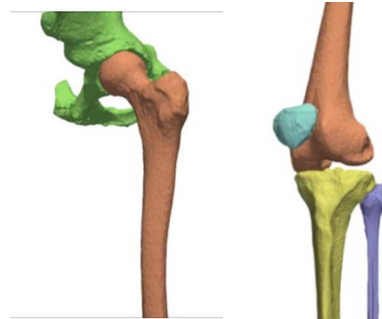
Cardiology



Pulmonology

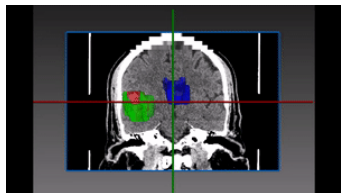


Surgical Navigation

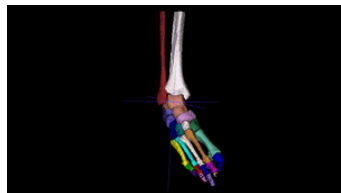


Orthopedics

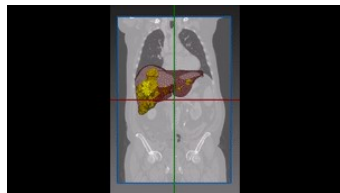
CT Based 3D Models for Planning and Navigation



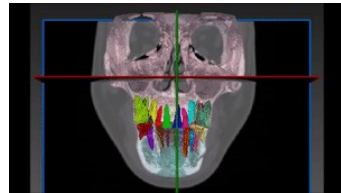
Brain Hemorrhage,
Ventricles and Edema



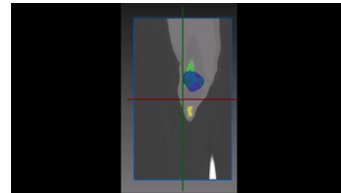
Bones



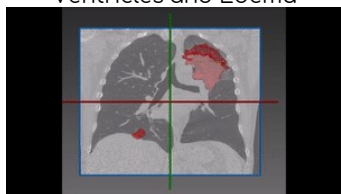
Liver and Liver Tumors



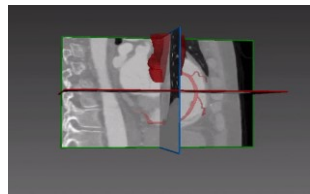
Teeth



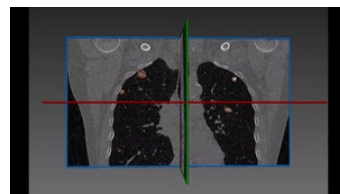
Knee



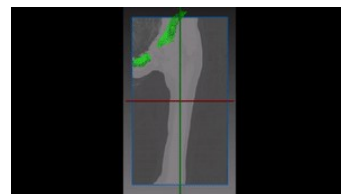
Lung tumors



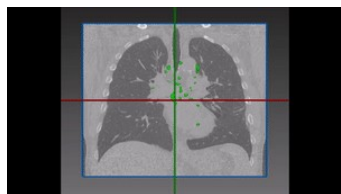
Coronary Arteries



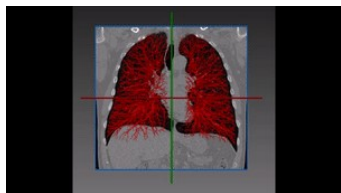
Lung Nodules



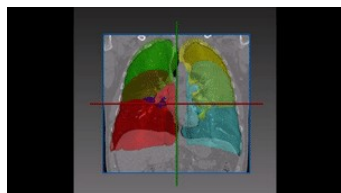
Hip



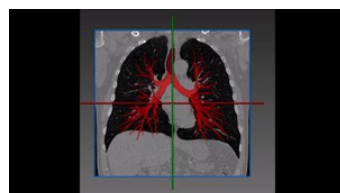
Mediastinal Lymph Nodes



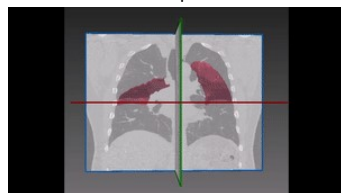
Pulmonary Blood Vessels



Pulmonary Lobes



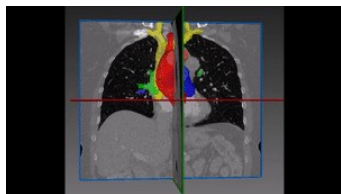
Airways



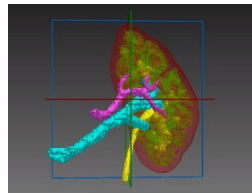
Pulmonary Fissures



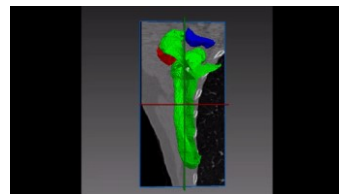
Vertebra



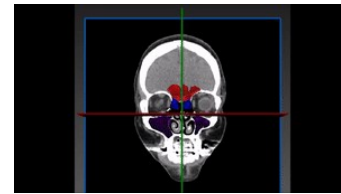
Great Vessels



Renal artery, vein, calyces,
ureter, cortex and medulla



Shoulder

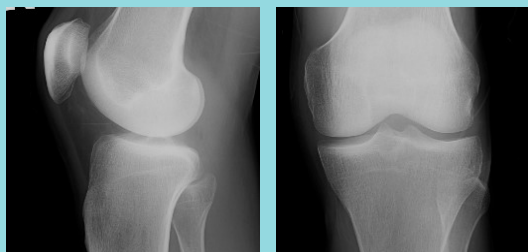


Sinuses

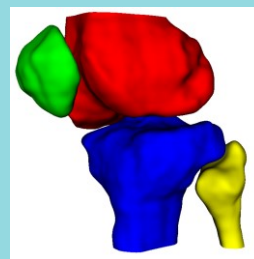
Need for 2D to 3D reconstruction

- In many Orthopedic procedures the surgeon needs 3D to plan and navigate
- CT is not always available while X-Ray has much wider use [Cheaper...]
- 2D to 3D Reconstruction is needed

2 X-rays shots



Reconstructed 3D Model



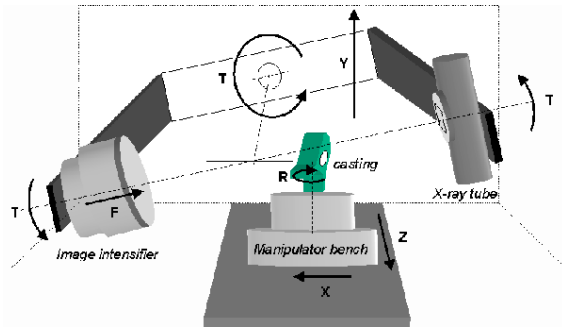
Video on 2D->3D reconstruction

<https://www.youtube.com/watch?v=EI51TuwwqWA>

Discussion:

What can we learn & apply?

- How can help the operator?
- We can built 3D models out of 2 projection for items that are harder to detect by eye balling.
- We might take CT for selected items and train the system to detect them from 2D
- Collect items that took longer or more views for the operator and build a model reconstruction to help



Thanks!

Questions?
Remarks?



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