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Shaping Tomorrow's Healthcare: "The Role of Al in Imaging Biomarkers with PET/CT/MRI"





- PET molecular imaging: Utilizes radioactive tracers to detect specific biological processes noninvasively.
- CT and MRI: Excel in detailed lesion imaging for cancer staging, treatment response assessment, and follow-up.
- MR biomarkers: Quantify biological changes detected through MRI.



Positive Aspects of using Al



- Automated Segmentation
- Prognostication & Analysis
- Objective Measurements
 - Enhanced Decision Making
 - Drug Discovery & **Optimization**
 - Treatment Optimization

- Disease specific biomarker detection.
- High disease classification
- Standardized QIBs (MRI Biomarkers) aid data comparison.
- IP can secure MRI biomarkers for future Al use.



- Short Follow-up Time & Historical Scans
- Heterogeneous Patient Cohort
- Image Acquisition Variability
- Bias and Uncertainty in Al Tools
- Training Data Limitations
- Lack of Unified Standards
- Retrospective Study Limitations

Oncology (







APPLICATIONS

Neurology 💮



Drug Development

Pathology

FUTURE WORK

Collection of imaging datasets of patients (biobanks) can help evaluate existing biomarkers BI-RADS with Al to develop further breast imaging Explainable Al



Patient data protection limits image access.

Bias from training data domain knowledge.