**Appendix 3:**

Table 2: The description of included articles

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **First Author/year** | **Cancer Type** | **Sample size (cases or Scan)** | **Public or Local** | **Imaging Modality** | **Object Detection Algorithms** | **Object Detection Architecture** | **Performance** |
| Abdusalomov, Akmalbek/2024 [1] | Brain Tumors | 3064  cases | Local | MRI1 | YOLO4v5 | One-Stage Detectors | recall rate: 86% |
| Yashar Ahmadyar Razlighi/2024[2] | Lung Cancer | 888 scans | Public (LUNA 16) | CT 2 | YOLOv5 | One-Stage Detectors | Accuracy: 98.4% 13AUC: 0.989 |
| Pouria Yazdian Anari/2024[3] | Renal Cell Carcinoma (RCC) | 1084 cases /5657 scans | Local | MRI | YOLOv7 | One-Stage Detectors | Sensitivity: 0.98 ± 0.004, and  14mAP: 0.95 ± 0.01 |
| Jenita Manokaran/2024[4] | Lung Cancer | 50 patients | Local | CT | YOLO | One-Stage Detectors | Precision: 0.982 Specificity: 0.923  Recall: 0.87 F1-score: 0.924 |
| Wen Song/2024[5] | Lung Cancer | 888 cases | Public (LUNA 16) | CT | 5M3N | One-Stage Detectors | 90.6% competitive performance metrics |
| Chaosheng Tang/2024[6] | Lung Cancer | 1,018 scans | Local | CT | YOLO based Model with Multiscale Feature Fusion and Attention Mechanisms | One-Stage Detectors | Sensitivity: 95% |
| Ito, Sadayuki/2023[7] | Brain Tumors | 195 (95 tumor cases, 100 controls) | Local | MRI | YOLOv4 | One-Stage Detectors | Location accuracy: 93.8% classification accuracy: 84.1% |
| Duygu Sinanc Terzi /2023[8] | Brain Tumors | 293 | Public (brain tumor dataset BraTS 2020) | MRI | Mask R-CNN, YOLOv8 | One-Stage Detectors  And  Two-Stage Detectors | 15AP (Mask R-CNN): 0.7  Average Priscian (YOLOv8) :0.6 |
| Ramazan Terzi/2023 [9] | Brain Tumors | 2024 | Public (Gazi Brains 2020 dataset) | MRI | Retina Net YOLOv3 7FCOS  8NAS-FPN 9ATSS 10VFNet, Faster R-CNN, Dynamic R-CNN  and  Cascade R-CNN | One-Stage Detectors  And  Two-Stage Detectors | mAP: 0.76 |
| Fei Xie/2023 [10] | Small Intestinal Tumor | 267 | Local | CT | Faster R-CNN Mask R-CNN Retina Net | Two-Stage Detectors | AP: 0.574 |
| Di Xu/2023 [11] | Prostate Cancer | 88 | Local | PET/CT3 | Mask R-CNN | Two-Stage Detectors | Sensitivity: 83.351% Precision: 58.621%  F1 score: 60.021%,  AUC: 90.034% |
| Chao Jin/2022[12] | Head & Neck | 150 (thoracic) + 225 (head/neck) | Local | CT | 11AAR-DL | One-stage detector | location error of ~4.4 mm |
| Mehralivand Shabnam/2022[13] | Prostate Cancer | 2,734 cases | Local | MRI | Cascaded Deep Learning | Two-Stage Detectors | Sensitivity: 0.93 |
| Yue Ming/2022[14] | Cervical Cancer | No | Local | PET/CT, FDG-PET/CT, Multimodal fusion | YOLOv5 | One-Stage Detectors | accuracy by 6.06% over PET and 8.9% over other fusion methods​ |
| Jeong Woo Son/2022 [15] | Lung Cancer | 515 | Local and LUNA16 | CT | YOLO, Efficient Net | One-Stage Detectors | AP: 0.7262 - 0.9151 (LUNA16),  AP: 0.7878 - 0.9167 (Local data) |
| Nathaniel C. Swinburne/2022 [16] | Brain Tumor | 10623 | Local | MRI | Retina Net Mask R-CNN | One-Stage Detectors  And  Two-Stage Detectors | F1: 0.83 (RetinaNet),  f1-Score: 0.85 (Mask R-CNN) |
| Jin Huh Oh/2022[17] | Brain Tumors | 113 | Local | MRI | YOLOv2 | One-Stage Detectors | sensitivity: 19.35%, precision: 24.82%, , F1-Score: 19.35% |
| Han Wang/2022 [18] | Lung Cancer | 593 | Local | CT | Faster-R-CNN  YOLO | One-Stage Detectors  And  Two-Stage Detectors | - |
| Tejas Shelatkar/2022[19] | Brain Tumors | - | Public (Brats 2021) | MRI | YOLOv5 | One-Stage Detectors | 88% precision |
| Jun Xu/2022[20] | Lung Cancer | 1018 | Public (LIDC-IDRI) | CT | Faster R-CNN | Two-Stage Detectors | sensitivity of 93.8%,  specificity: 97.6% accuracy:95.7% |
| Chegraoui, Hamza/2021 [21] | Brain Tumors | 330 | Public (Brats 2021) | MRI | YOLOv3 | One-Stage Detectors | recall rate (above 84% for all models)  DSC: 0.847 to 0.899 |
| Sadayuki Ito/2021 [22] | Spinal Schwannoma | 92 | Local | MRI | YOLOv3 | One-Stage Detectors | Sensitivity: 85.3%, Specificity: 91.8%,  Accuracy: 88.0% |
| Shanaka Ramesh Gunasekara/2021[23] | Brain Tumors | - | Public | MRI | R-CNN | Two-Stage Detectors | DSC :0.92 |
| Hiroshi Takao/2021[24] | Brain Tumors | 127 cases (696 metastases) | Public | CT | 12SSD | One-Stage Detectors | Sensitivity:88% |
| Xian Peng/2021 [25] | Liver tumor | 1,000 CT scans | Public | CT | SSD | One-Stage Detectors | - |
| Adachi, Mio/2020[26] | Breast Cancer | 371 | Local | MRI | Faster R-CNN | Two-Stage Detectors | AUC: 0.925 |
| Ying Su/2020 [27] | Lung Cancer | 7000 | Public (LIDC-IDRI) | CT | Faster R-CNN | Two-Stage Detectors | - |

1MRI:Magnetic resonance imaging, 2CT: Computed Tomography,3PET/CT: Positron Emission Tomography/ Computed Tomography, 4YOLO:You Only Look Once, 5M3N: Multiscale 3D anchor-free deep learning network , 6R-CNN: regions with convolutional neural networks, 7FCOS:fully convolutional one-stage object detector,8NAS-FPN: Learning Scalable Feature Pyramid Architecture for Object Detection,9ATSS: Adaptive Training Sample Selection, 10VF Net: VarifocalNet, 11AAR-DL: Automatic Anatomy Recognition-Deep Learning, 12SSD: Single Shot Detector, 13AUC: Area Under the Curve, 14mAP: meanAverage Percision, 14DSC: Dice Similarity Coefficient,15AP: Average Percisian

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