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Role of artificial intelligence and cancer imaging

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Judgement, as one of the core tenets of medicine, relies upon the integration of multi-layered data with nuanced decision making. Cancer offers a unique context for medical decisions given not only its variegated forms with evolution of disease but also the need to consider the individual condition of patients, their ability to receive treatment, and their responses to treatment. Challenges remain in the accurate detection, characterization, and monitoring of cancers despite improved technologies. Radiographic assessment of disease most commonly relies upon visual evaluations, the interpretations of which may be augmented by advanced computational analyses. Artificial intelligence (AI) promises to make great strides in the qualitative interpretation of cancer imaging by expert clinicians, including volumetric delineation of tumours over time, extrapolation of the tumour genotype and biological course from its radiographic phenotype, prediction of clinical outcome, and assessment of the impact of disease and treatment on adjacent organs. AI may automate processes in the initial interpretation of images and shift the clinical workflow of radiographic detection, management decisions on whether to administer an intervention, and subsequent observation to a yet to be envisioned paradigm. Here, the authors review the current state of AI as applied to medical imaging of cancer and describe advances in 4 tumour types (lung, brain, breast, and prostate) to illustrate how common clinical problems are being addressed. Although most studies evaluating AI applications in oncology to date have not been vigorously validated for reproducibility and generalizability, the results do highlight increasingly concerted efforts in pushing AI technology to clinical use and to impact future directions in cancer care.

Biography

Bhawana Solanki has a 8 years of academic experience in the field of Medical Radiology Imaging Technology. She is a Research scholar, M.Sc. & B.sc from University College of medical science, Delhi University. Presently she is working as assistant professor, Santosh University, Ghaziabad, Delhi. Former Assistant Professor, Era University & Noida international university, India. She has 15 national & international research publications.She is listed as an expert member (course instructor) for finalizing the curriculum for radiology technician, CTS NSQF level 5 under ministry of skill development and entrepreneurship. She worked as a project coordinator of "unnat bharat abhiyan 2.0" a flagship program of the ministry of human resources development.

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