Submission Topic: Role of AI in optimizing treatment decision-making and patient management in oncology.

Full Name
Athira Vincent

Name of the Institution:
Regional Cancer Center

State:
Kerala

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
To develop a self-learning AI platform that supports accurate cancer diagnosis, personalized treatment, and real-time patient monitoring through multimodal data integration and continuous clinician-guided improvement.

Describe your solution / proposal: Provide a detailed account of your solution/ proposal to this challenge. You could type your solution/ proposal here. (Disclaimer: Solution/proposal should not exceed more than 300 words.):
ONCOBOT AI: GUIDING TREATMENT, GUARDING HOPE.
1. A self-learning AI platform which can effectively decentralize the multimodal, data intensive aspects in oncology care such as histopathological examination, radiology, genomics and molecular and patient assessment.
2. The application can be launched as a pilot program in few selected apex centers in our country.
3. The platform is fed retrospective data, from the patients of the center for over the last 5 years, which includes the demographics, disease specific details, including the histopathological slides, images and reports, NGS reports, staging, treatment plan and toxicities, response to therapy, survival, post treatment complications.
4. Once it learns from the data, another set of unlabeled data is fed for validation of its ability to diagnose, predict and implement treatment and monitor response, predict toxicities and early relapses.
5. This can be then implemented in clinical practice.
6. Each step of the way, for instance, interpreting the biopsy, the image is uploaded to ONCOBOT and it gives a report which is then approved by the pathologist, radiologist following a CT/MRI.
7. An override command is given if there is an error in the AI generated report. The model learns from each error it makes and hence it is a self-improving model.
8. Treatment plan is formulated by the bot once the work up is completed. The plan is then approved by a multidisciplinary tumor board. The ethical concerns of an AI generated plan or report can be partially negated with approval from a qualified professional.
9. The model can predict toxicities that can develop complications to watch for. Patients can be given access to a user friendly chatbot, which can regularly monitor them including daily counts and biochemistry and advise hospital visit when experiencing any difficulty. It can be linked to wearables (like apple watch) to monitor basic vitals of patient and refer them for further care if necessary.