Targeting Tumors

Detection and treatment of cancer have progressed, but neither is as precise as doctors would like. For example, tumors can change shape or location between pre-operative diagnosis and treatment so that radiation is aimed at a target which may have moved. Geometry, partial differential equations, and integer linear programming are three areas of mathematics used to process data in real-time, which allows doctors to inflict maximum damage to the tumor, with minimum damage to healthy tissue.

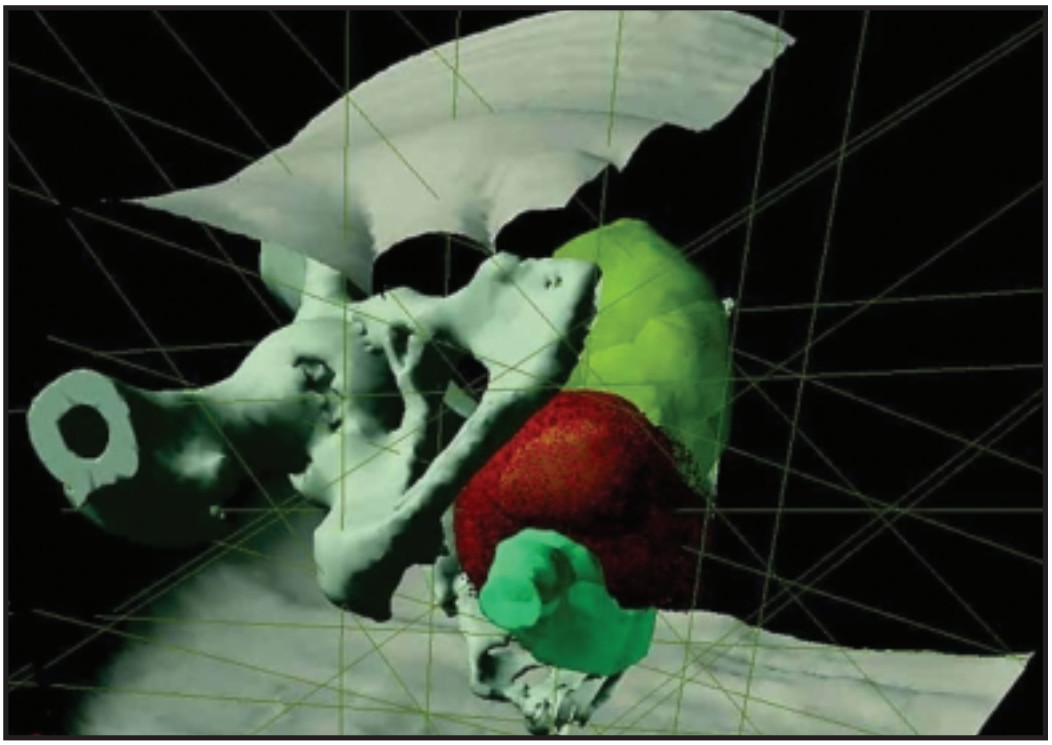

Image: Large-scale intensity-modulated radiation therapy optimization (tumor in red), courtesy of Eva Lee, Georgia Institute of Technology.

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