

Help Cure Cancer

Course Project

OR7245: Network Analysis and Advanced Optimization

Group Members: Abhilash Janardhanan (NU ID:001057280)

Prerit Samria (NU ID: 001380934)

Motivation

Radiation therapy (also called radiotherapy) is a cancer treatment that uses high doses of radiation to kill cancer cells and shrink tumors. Radiation not only kills the cancer cells, but it also affects nearby healthy cells, and this damage to healthy cells causes side effects.

Goal

Determine the intensity levels to set for the beams for the radiation delivery so as to maximize the radiation dosage to the tumorous area while minimizing the dosage to the critical area.

AMPL Files

The files for each subtask for task-2 is in the folder:

AMPL Files -> Task-2 -> Subtask - i -> smallexample / actualexample, for i = 1, 2, 3, 4.

The required input files are available in each example folder.

Visualization Files

The files for each subtask for visualization is in the folder:

AMPL Files -> Visualization -> Subtask - i -> smallexample / actualexample, for i = 1, 2, 3, 4.

The required input files are available in each example folder.

Sensitivity Analysis Files

The files for sensitivity analysis is in the folder:

AMPL Files -> Sensitivity Analysis

Software Required

The softwares required to run are Linear programming code is AMPL, and to run the visualization code is MAPLE.