

Postdoctoral fellowship in radiation treatment optimization

We seek candidates for a postdoctoral position at the Massachusetts General Hospital, Radiation Oncology (Physics) department. The successful candidate will develop optimized treatment schedules for the treatment of patients with photon and proton beams. Recently, we have shown that the effectiveness of radiotherapy can be substantially improved by altering the radiation dose distribution from day to day, a concept that is referred to as non-uniform spatiotemporal fractionation. Designing such treatments, however, is algorithmically far more challenging than planning conventional uniformly fractionated treatments. Designing non-uniform spatiotemporal treatments is based on biologically effective dose, which is a quadratic function of the physical dose. This leads to large scale non-convex quadratically constrained quadratic programming problems. We are particularly interested in optimally combining photon and proton treatments. Proton therapy is a scarce resource. We wish to answer the question how to optimize the combined treatments given that we have only a limited number of proton slots available.

The candidate should have a strong background in operations research, mathematics, physics, computer science or similar areas, and a strong interest in developing solutions for practical problems in medicine. Experience in developing algorithms and computer programs is expected.

The project is supported by Philips Medical Systems. The candidate will be part of an international collaboration including two centers in Europe and several in the USA.

MGH is an equal opportunity employer. We value diversity highly and encourage international and minority candidates to apply.

The qualified candidate will be appointed as a research fellow at the Harvard Medical School.

Please email your CV and a list of 3 references to

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