

**Purpose:** Implanted gold seed markers are currently used to localize the relative prostate position during radiation therapy. This is typically accomplished by manually matching each seed on an electronic portal image with the corresponding seed location on a reference DRR. This study evaluates an edge enhancement algorithm applied to an EPID image for accurately identifying gold seed marker position.

**Method and Materials:** The algorithm is based on the gold seed size which determines the lower and upper bounds of a bandpass filter, and uses “Intensity Autoscale” and “Contrast Saturation” functions to produce a better visual contrast of the three gold seeds. A Siemens Oncor linear accelerator was used to image four prostate patients using standard AP and LLAT image projections. We tested the bandpass filters with two different bands to process the images. The first band is to set the larger structure down to 20 pixels and the smaller structure up to 3 pixels to pass. The second band is to set the larger structure down to 6 pixels and lower structure up to 3 pixels. After applying the bandpass filter, the “Intensity Autoscale” and “Contrast Saturation” functions are applied. The processed images were compared to the original EPID images that were filtered using histogram equalization and then edge enhancement.

**Results:** This algorithm was successful for all images tested. The gold seed markers are clearly visualized on the processed images relative to the standard filtering functions provided with the EPID software.

**Conclusion:** This new image enhancement method is fast and will easily integrate with an existing three-point registration technique for localizing the prostate relative to a reference DRR. The method also has the potential to be used for computer automated detection of gold seeds in prostate electronic portal images.