



# VCU

VIRGINIA COMMONWEALTH UNIVERSITY

## “Accurate Pelvic Injury Detection for X-Ray and CT Images”

VCU 09-24, 09-25, 12-87, 12-89

### Applications

- Detection of location and severity of pelvic fractures using X-ray or CT images
- Detection of location and severity of pelvic hemorrhage using CT images
- Detection of other trauma injuries

### Advantages

- Effective automatic initialization
- More accurate segmentation compared to existing methods in a timely manner
- Distinguishes bone from blood in tissue for CT images
- Immediate expert analysis of images, greatly limiting need for human review

### Inventors

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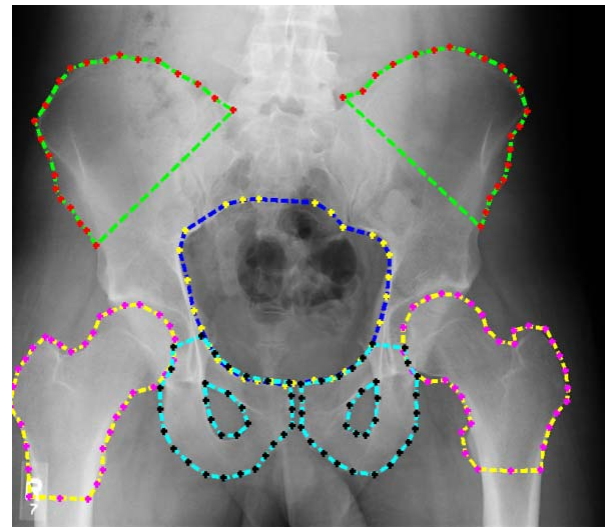
### Market Need

Pelvic fractures can be debilitating and even fatal if not treated correctly and in a timely manner. Current fracture imaging techniques are known to produce low resolution images and require some measure of manual interaction. Hence, there is a need for fully automated fracture imaging methods that are better able to analyze pelvic fracture images.

### Technology Summary

Researchers at VCU have developed methods to better assess the severity and location of pelvic fractures based on improved segmentation of X-ray or CT images. The methods have effective automatic initialization and produce a more accurate segmentation of images compared to existing methods, as shown in the figure. It also enables detection of hemorrhage in the pelvic region and separation of this from the detected bones.

Evidence has shown that features calculated from the known location of segmented bones - such as pubis bone gap - are strong indicators of pelvic injury severity. An experiment using these features for prediction of injury severity in trauma patients resulted in a prediction accuracy rate of 87.5%. This percentage is significant because other methods may not distinguish these diagnostic features with much accuracy or even at all.



### Technology Status

US patent pending: 13/255,542. Additional patents pending.  
Technology has been tested on pelvic images.

*Fracture Detection in Traumatic Pelvic CT Images*. Published by the International Journal of Biomedical Imaging in January 2012

This technology is available for licensing to industry for further development and commercialization.