UPPSALA
UNIVERSITET

Teknisk- naturvetenskaplig fakultet
UTH-enheten

Besöksadress:
Ångströmlaboratoriet
Lägerhyddsvägen 1
Hus 4, Plan 0

Postadress:
Box 536
751 21 Uppsala

Telefon:
018 – 471 30 03

Telefax:
018 – 471 30 00

Hemsida:
http://www.teknat.uu.se/student

Abstract

Stitching of X-ray Images

Krishna Paudel

Image processing and analysis algorithms are widely used in medical systems to analyze medical images to help diagnose the disease of a patient. This thesis covers one of the demanding problems of a medical system: Stitching of X-ray Images. The flat panel of an X-ray system cannot cover all part of a body, so image stitching is incorporated in the medical system to combine two or more X-ray images and get a single high resolution image. The output of this thesis work is to develop a real-time and user interactive stitching application which works for all X-ray images with different intensity and orientation.

The stitching of X-ray images is carried out by employing two basic steps: registration and blending. The classical registration methods search for all the pixels to get the best registration. These methods are slow and cannot perform well for high resolution X-ray images. The feature based registration methods are faster and always gives the best registration. This thesis evaluates three popular feature based registration methods: HARRIS, SIFT and SURF. The exhaustive nearest neighborhood method has been modified to get faster matching of key points.

The overlapping areas of the composite image are blended to remove the seams and discontinuities. This thesis evaluates some faster blending techniques and incorporates an advanced blending method using blending masks to blend complexly aligned images.

Handledare: Felix Rutscher
Ämnesgranskare: Cris Luengo
Examinator: Lisa Kaati
IT 12 057
Tryckt av: Reprocentralen ITC