A STUDY ON REGISTRATION OF ROAD NETWORK TO IMAGERY

Jose L. Flores
Associate Professor
Department of Civil Engineering and Surveying
University of Puerto Rico at Mayagüez
jose.flores22@upr.edu

Existing road network maps need to be registered to images for change detection, database update and data conflation. We present a study on registering vector road networks using the intersections points found in a raster image. Searching or scanning the entire image has the disadvantage of creating a heavy burden on any system, and it is technically difficult to determine road networks from imagery without additional information. To overcome this we use the a-prior knowledge from the road network map to limit the search to a smaller region in the image, and help locate one intersection at a time. Well known image processing algorithms are used to locate the intersections in the image. The Canny edge detector is used to locate the road edges in the image, while the Hough transform is used to locate and represent the most likely candidate edges belonging to roads in an intersection. Once the edges are located, the road intersections are determined from calculated centerlines using the found road edges. These image intersections then are compared to the corresponding map intersections to conflate the road network by using a series of transforms.