Auto-Register Canon EOS Camera Image

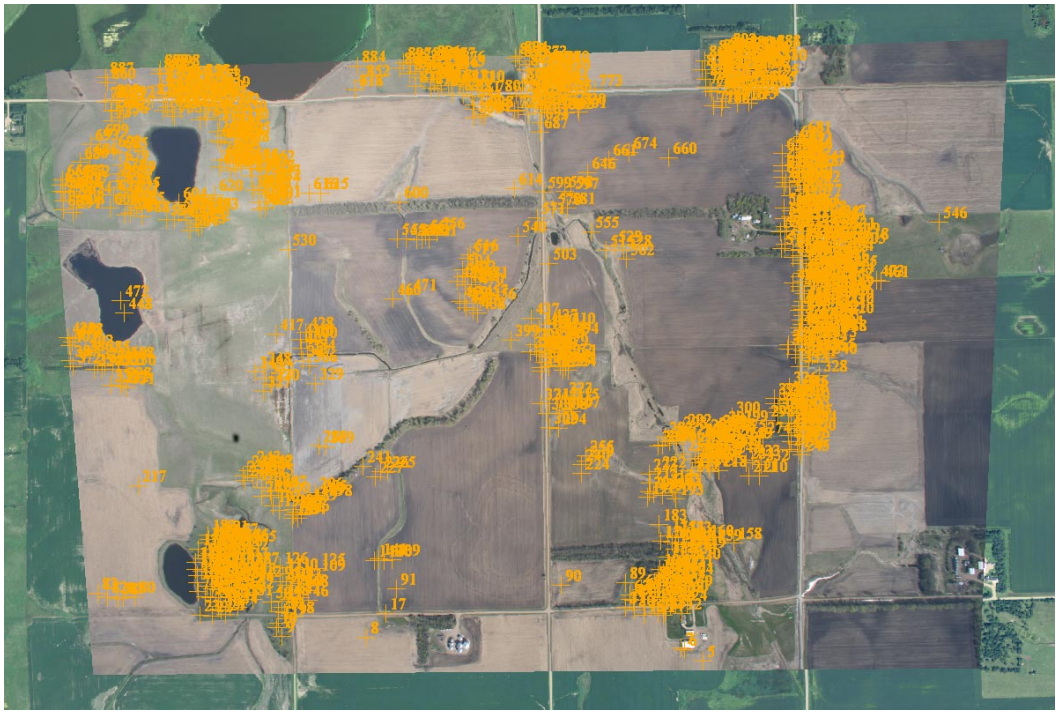
Input Image: Natural-color aerial image of a small area (about 1.25 by 2 miles, or 2 by 3.2 km) in Brookings County, South Dakota. This image was acquired in 2010 by the U.S. Fish and Wildlife Service using a Canon EOS 5D digital camera and a Canon EF 14 mm wide angle lens. It was recorded in RAW format and is 4368 columns by 2912 lines in size with a cell size of 0.67 meters. It was acquired from a fixed-wing aircraft at an altitude of approximately 835 meters above the terrain. Ground elevations in the image area vary by about 30 meters. The camera line-of-sight was not vertical when the image was acquired; the resulting tilt-distortion is partly corrected in this display by warping the image with the plane-projective model using the four manually-placed control points (black). Most agricultural fields are still bare in this early-season image.

Reference Image: Portion of USDA NAIP 2010 natural-color orthoimage mosaic of Brookings County, South Dakota (JP2 file) with cell size of 1 meter. The yellow box shows the approximate area covered by the aerial image. The orthoimages making up this mosaic were acquired much later in the growing season than the input aerial image, as all agricultural fields in the mosaic show full crop cover.

Auto-Register Settings:

Match green spectral component in each image:
Input "Green" --> Reference "Green"
Initial Accuracy Estimate: 5 cells (3.3 meters)
Generated Point Spacing: 40 cells (27 meters)
Maximum Point Residual: 5.0 cells (3.3 meters)
Correlation Patch Size: 128
Maximum Adaptive Model: As Specified (Plane Projective)

Auto-Register Result (overlaid on the NAIP reference image)



Auto-Register produced 895 control points

Using smaller Generated Point Spacing and/or larger Maximum Point Residual values produce more control points. Some areas of the image lack control points due to local topographic relief, which produces residual values for candidate control points that exceed the maximum allowed for this run.

RMS Residuals:

X = 2.25 cells (1.5 meters),
Y = 1.97 cells (1.3 meters),
XY = 2.99 cells (2.0 meters)
(Model = Plane Projective)

Mean Absolute Residuals:

X = 1.85 cells (1.2 meters),
Y = 1.60 cells (1.1 meters)