Generally, when we use sensing data, a pixel is the smallest resolution to which we can measure data. However, while dealing with large surfaces, we require even greater accuracy. Hence, we use many sub-pixel refining techniques to improve the overall quality of our data.

Sub pixel classification is of two types, hard classification and soft classification. In hard classification, each pixel is assigned the dominant class present in it. However, this leads to loss of data. A better approach is soft classification where each pixel is assigned percentages of each class. This pixel can then be broken down into sub-pixels, the sub pixels are assigned classes based on the percentages in the original pixel.

The distribution of sub-pixels can be done in many methods. One simple approach would be to check the dominant classes in the pixels surrounding the current pixel. Based on this we can know where to distribute our subpixels. For example, if the pixel left to our current pixel has class A as dominant and the one in the right has class B as dominant, then subpixels with class A will be distributed to the left while those with class B will be distributed towards the right.

Better methods for sub-pixel refining obviously exist. Some research papers treat it as an optimization problem where they try to minimize inaccuracies.

Bibliography

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