Computer exercise

- Maximum Likelihood Classification of Satellite Images

Number of object class: 5 (as shown in Fig)
Feature vector: $\mathbf{x}=[R \;\; G \;\; B]^T$

Step 1: Randomly select 10 points from each class as training data
$\mathbf{x}_k^n$ (k=1, 2,…,5; n=1, 2, .., 10)
Step 2: Calculating mean vector $\boldsymbol{\mu}_k$ and covariance matrix $\boldsymbol{\Sigma}_k$ for each class using its training data $\mathbf{x}_k^n$.

Step 3: $\mathbf{x}=[R(i,j) \;\; G(i,j) \;\; B(i,j)]^T$ for pixel (i, j)
Step 4: Calculate likelihood $p(\mathbf{x}|k)$ for all classes (k=1, 2,.., 5).
Step 5: Classify the pixel (i,j) to class c, if $p(\mathbf{x}|c)$ =max $p(\mathbf{x}|k)$.
Step 6: Repeat step 3-5 for all pixels