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HW 1.
Hand-written Part.

L2 distances: Class A: $\sqrt{0^2+1^2+0^2}=1$, $\sqrt{0^2+1^2+1^2}=\sqrt{2}$, $\sqrt{1^2+2^2+1^2}=\sqrt{6}$, $\sqrt{1^2+2^2+0^2}=\sqrt{5}$

Class B: $\sqrt{1^2+2^2+2^2}=3$, $\sqrt{2^2+2^2+2^2}=2\sqrt{3}$, $\sqrt{1^2+2^2+1^2}=\sqrt{6}$, $\sqrt{2^2+2^2+3^2}=\sqrt{17}$

Class C: $\sqrt{1^2+1^2+1^2}=\sqrt{3}$, $\sqrt{0^2+1^2+2^2}=\sqrt{5}$, $\sqrt{0^2+1^2+1^2}=\sqrt{2}$, $\sqrt{1^2+2^2+1^2}=\sqrt{6}$

When K=1, shortest distance is 1, in the Class A. thus the prediction is Class A.

When K=2, shortest distances are 1 in the Class A and $\sqrt{2}$ in both Class A and class C. The prediction should be Class A if we consider the $\sqrt{2}$ conditions have an equal distribution.

When K=3, shortest distances are 1, $\sqrt{2}$ in the Class A and $\sqrt{2}$ in class C, since the majority is in Class A, the prediction should be Class A.