

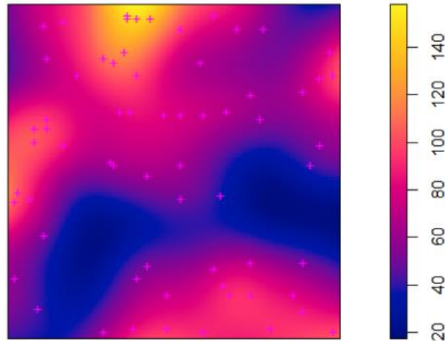
Lab3 Report

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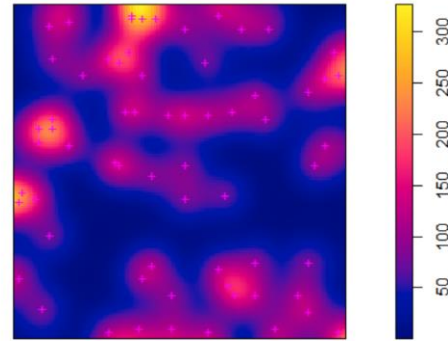
Assignment1:

Describe first order effects in each plot of the two kernel estimations.

Kernel Estimation of JP: $\sigma=0.1$



Kernel Estimation of JP: $\sigma=0.05$



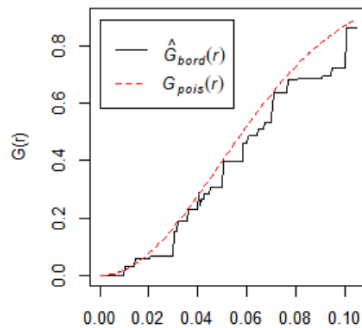
From the first picture, when sigma is equal to 0.1, the picture is smoother. We can clearly see that the points at the upper part and the bottom are more concentrated. And there is a gap between the upper part and the bottom. However, there is less details.

When sigma is equal to 0.05, due to the buffer is too small, the degree of aggregation of events is not obvious. However, there is more details.

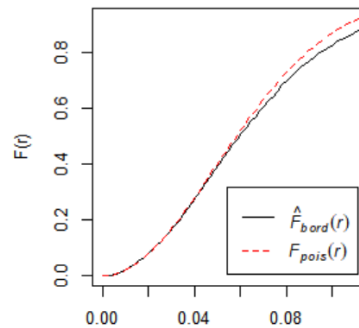
Assignment2:

Interpret the plots (i.e. Ghat, Fhat, Khat, and Lhat) focusing on whether the point pattern is clustered, random, or regular and what leads you to the conclusion.

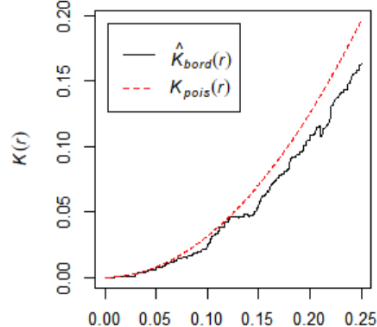
G Estimates



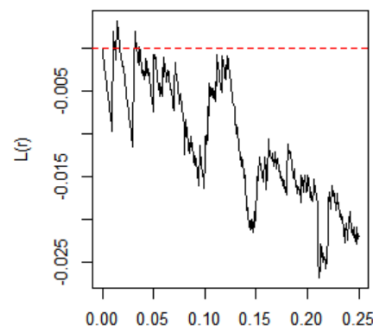
F Estimates



K function for JP data



L function for JP data



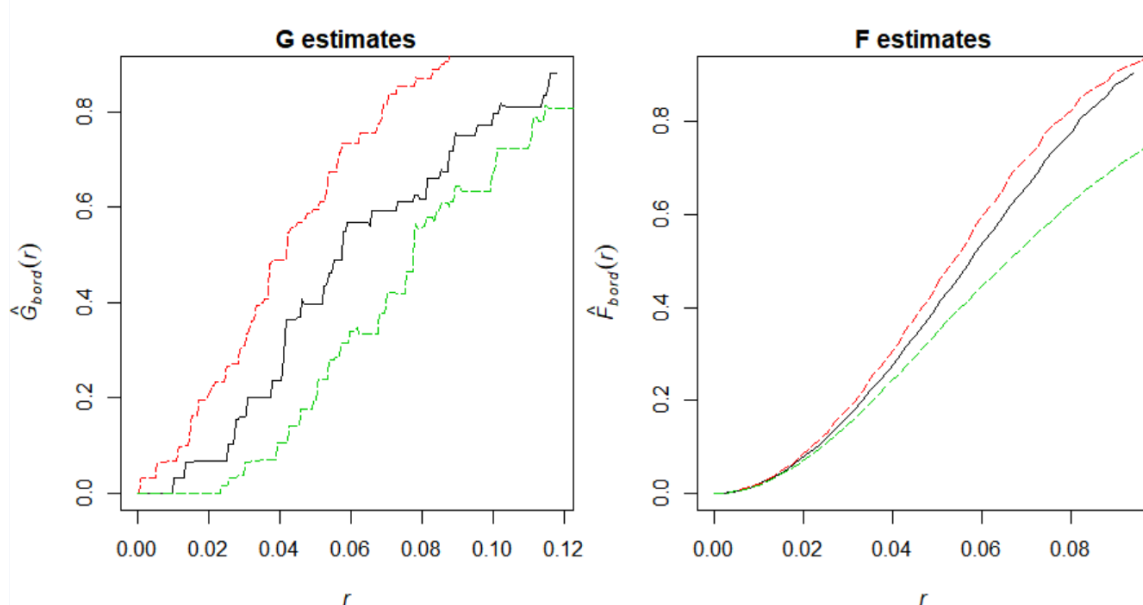
In these four pictures, the line in red color is random point pattern in these four pictures. For G estimate and F estimate, firstly, when a line is above the red line, it's a cluster pattern. Secondly, when a line is below the red line, it's a regular pattern. In the first three pictures, the black line is close to the red line. Thirdly, when a line is just on the red line or close to the red line, it's a random pattern.

As to the case in this question, if it's a cluster pattern, when the horizontal coordinate value is small, the black line should be higher than the red line. If it's a regular pattern, when the horizontal coordinate value is small, the black line should be lower than the red line. However, the black line is almost coincident with the red line. As the distance increases, the black line is slightly lower than the red line. In general, the black line is very close to the red line. So, I think the pattern is more likely to be a random pattern.

For K function and L function, the pattern is determined by different scales. When the distance is small, maybe lower than 0.10, the black line is almost coincident with the red line. So, when the distance is small, the pattern is random pattern. When the distance increases, maybe larger than 0.01, the black line is below the red line, it's more likely to be a regular pattern.

Assignment3:

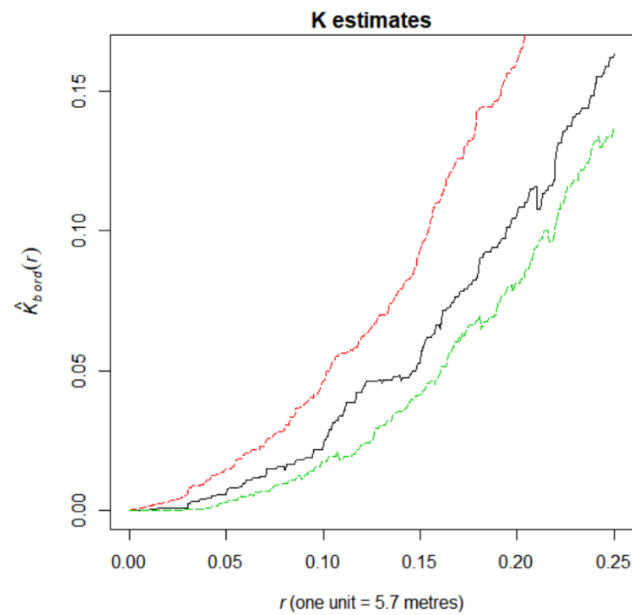
Based on the Ghat and Fhat with the simulation results, interpret the point pattern of Japanese pine sapling.



I think the point pattern of Japanese pine sapling is random. Because both black line of G estimates and that of F estimates are in the enclosed area of the upper line and the lower line. But for F estimate, the black line is closer to the upper line,

Assignment4:

Based on the Khat with simulation results, interpret the point pattern of Japanese pine sapling.



I think the point pattern of Japanese pine sapling is random. Because the black line in K estimates is in the enclosed area of the upper line and the lower line.