

N_K
for $K_{min} = K_{max}$:



decide K_{opt}
use the result $K = K_{opt}$

$N \times K$
for $K_{min} = K_{max}$:



$K = K_{opt}$
 $P_i = \text{result of } K = K_{opt}$



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use result
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for $K_{min} = K_{max}$:



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 $P_i = \text{result of } K = K_{opt}$



use result
 $K = K_{opt}$.

① Find K

② initialize particles

③ clustering



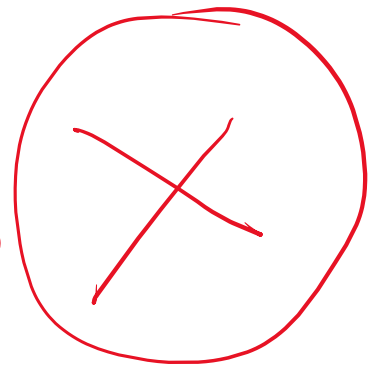
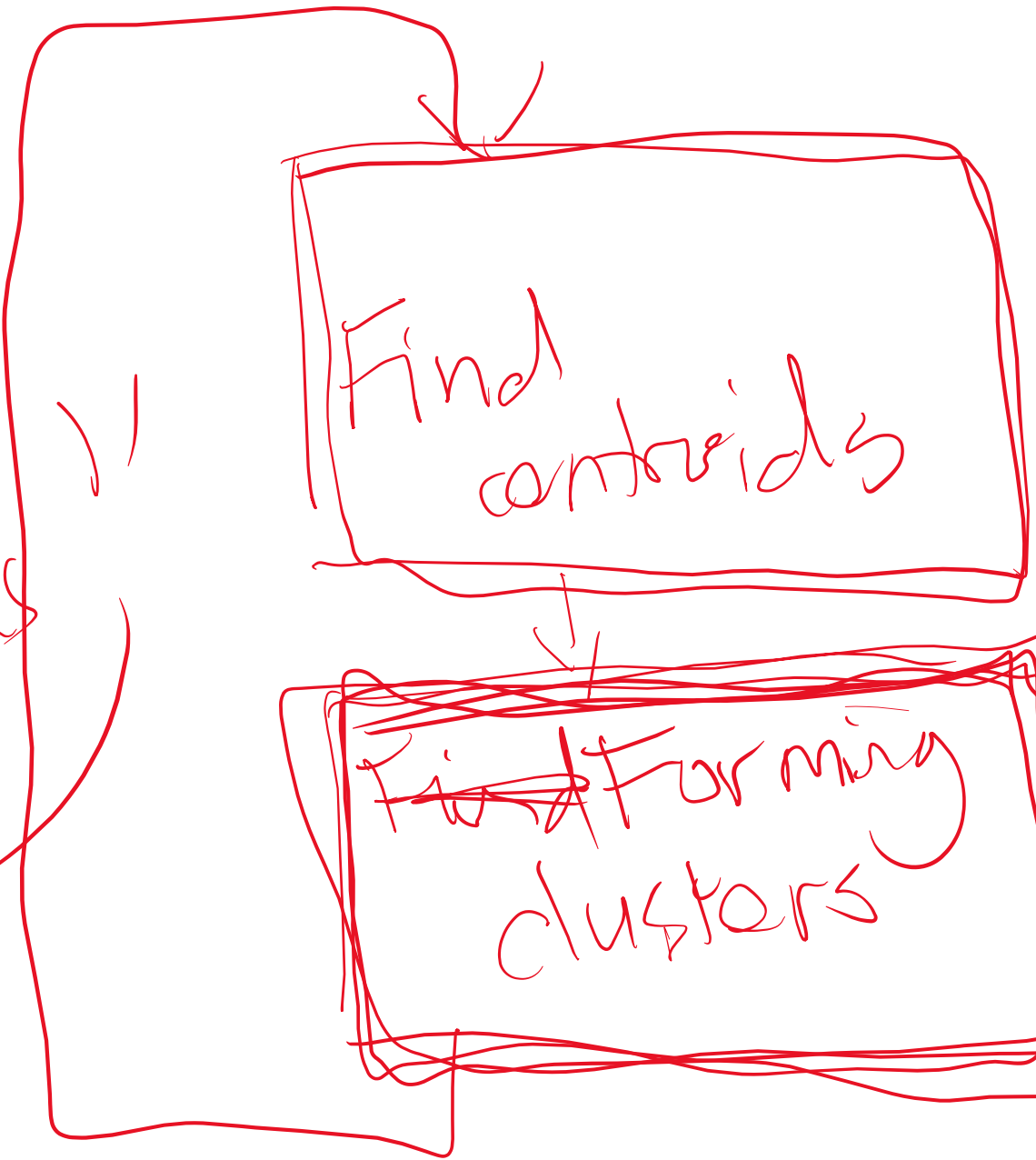
SSM?

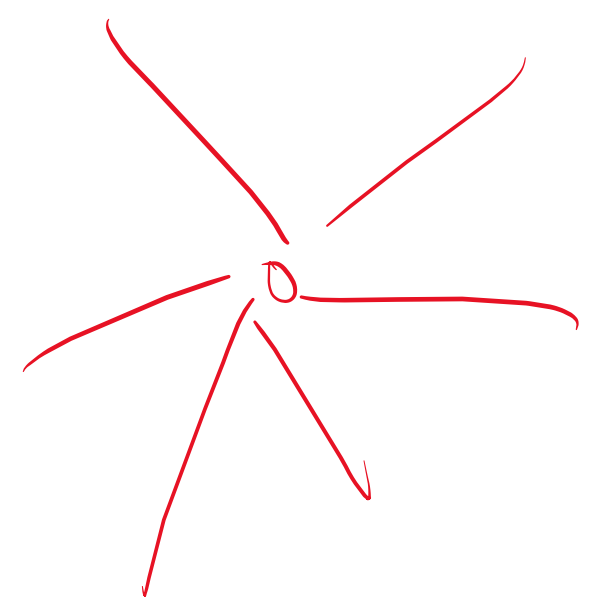
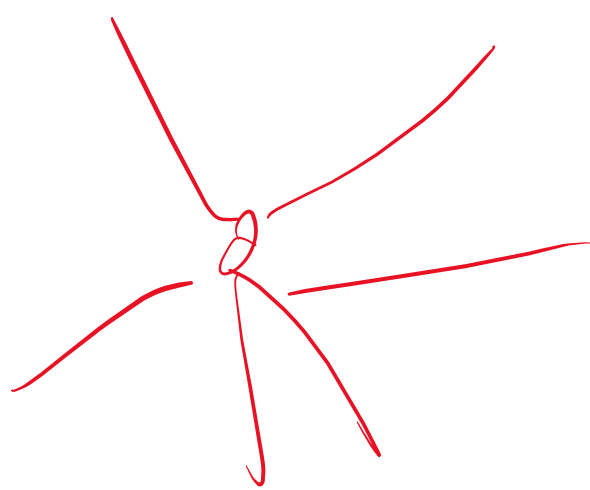
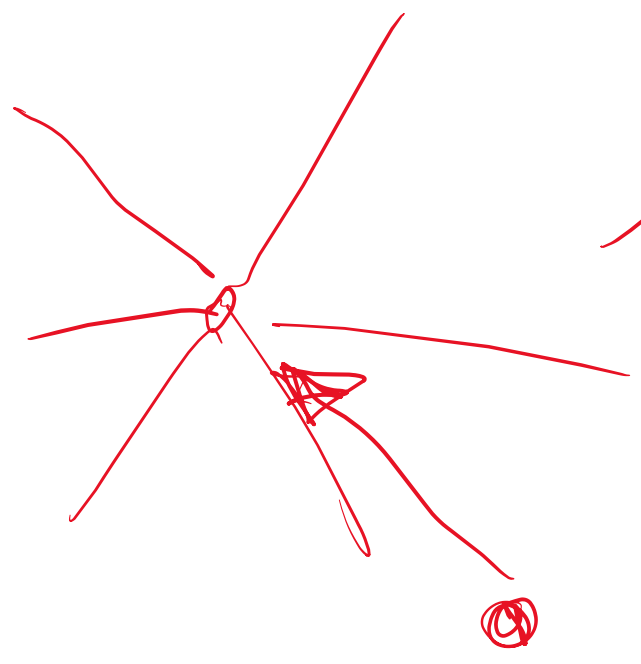
$K = K_{opt}$



use result
 $K = K_{opt}$.

K-means





Handwritten notes and symbols in red ink. At the top left, there is a circled 'X' followed by the numbers 6, 2, 0, 6, 2, 0. Below this, there are several small circles and a larger circle containing a cross. To the right, there are several small circles and a larger circle containing a cross. Below the main shape, there are several small circles and a larger circle containing a cross. To the right, there are several small circles and a larger circle containing a cross. Below the main shape, there are several small circles and a larger circle containing a cross. To the right, there are several small circles and a larger circle containing a cross.