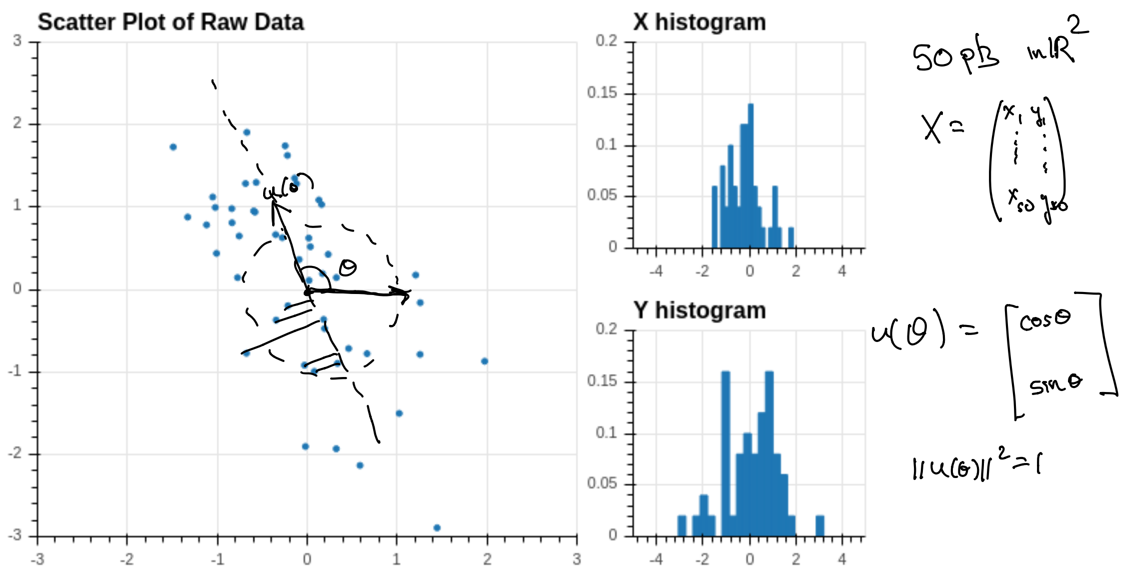
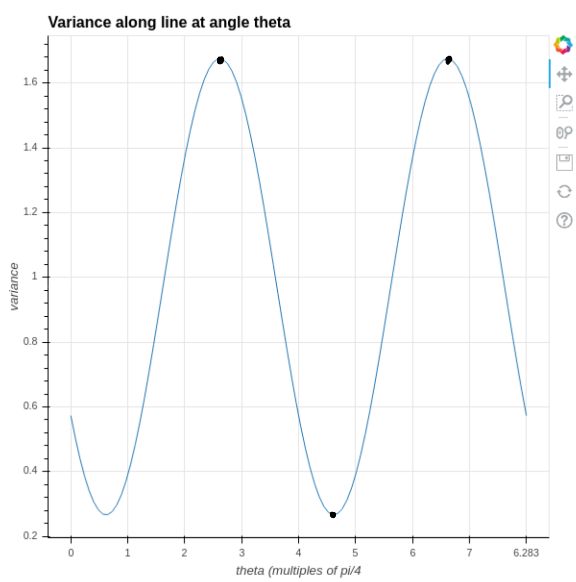
Change of variance with direction

Change of variance

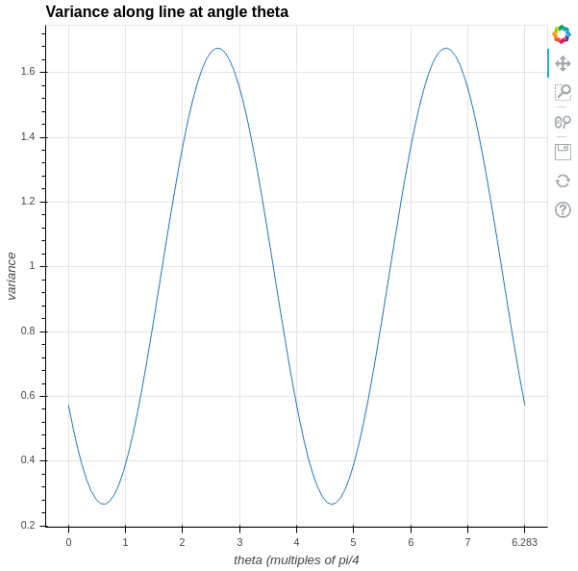


$X u(\theta)$ = points along θ line $S(\theta)$

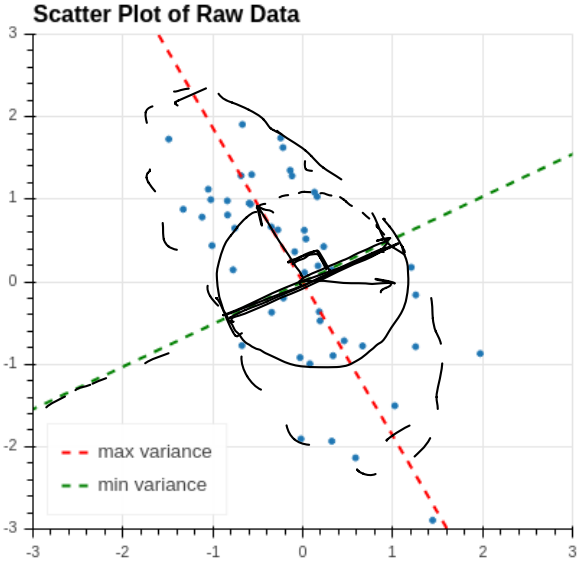
$$\sigma_\theta^2 = \frac{1}{N} S(\theta)^T S(\theta) = u(\theta)^T D_\theta u(\theta)$$



principal directions



principal directions are the critical points where variance along u is a max or a min.



2 principal directions

- variance minimal
- variance maximum