

# Process Monitoring

by  
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Process Monitoring

# Chapter 3a

# Principal Component Analysis



Process Monitoring

# Assignment II

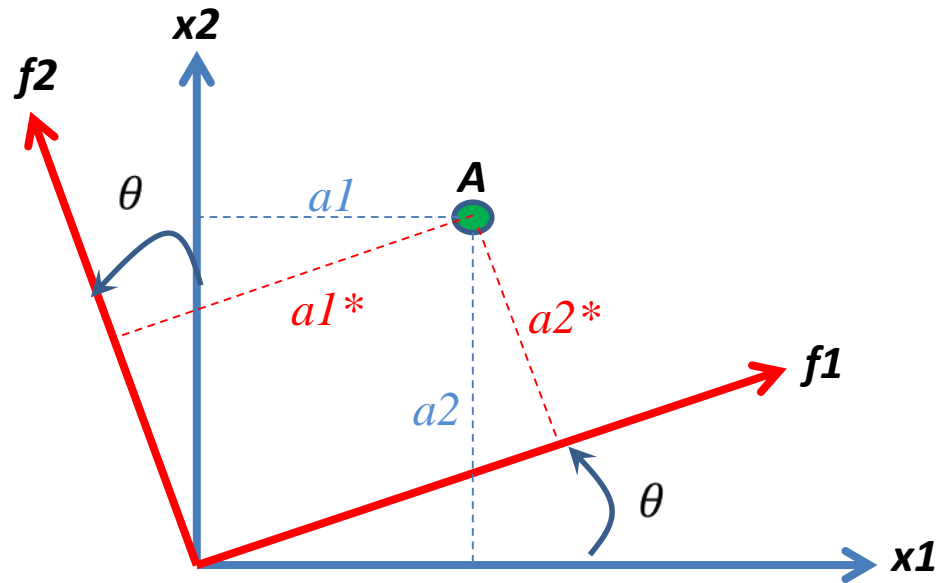


Figure A

- From Figure A, prove that the new coordinates  $\mathbf{A}$  ( $a1^*$ ,  $a2^*$ ) in terms of the new basis vectors  $\mathbf{f1}$ ,  $\mathbf{f2}$  are given by

$$\begin{bmatrix} a1^* \\ a2^* \end{bmatrix} = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} \begin{bmatrix} a1 \\ a2 \end{bmatrix}$$



# References

- Green, P.E., and Carroll, J.D., (1976). *Mathematical Tools for Applied Multivariate Analysis*. New York, USA: Academic Press.
- Jackson, J.E., (1991). *A User's Guide To Principal Components*. John Wiley and Sons. USA.



# Authors Information

Credit to the authors:



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