



Figure 3: A comparison of factor analysis and PCA. The underlying data generating process is $y = x + \epsilon$, where ϵ is Gaussian noise of standard deviation σ . In the plots from left to right, σ takes the values 0.5, 1.2, 2, 3, 4. The FA solution is given by the solid arrow, and the PCA solution by the dashed arrow. The correct direction is given by the solid line. Note how the PCA solution “rotates” upwards as the noise level increases, whereas the FA solution remains a better estimate of the underlying correct direction.