

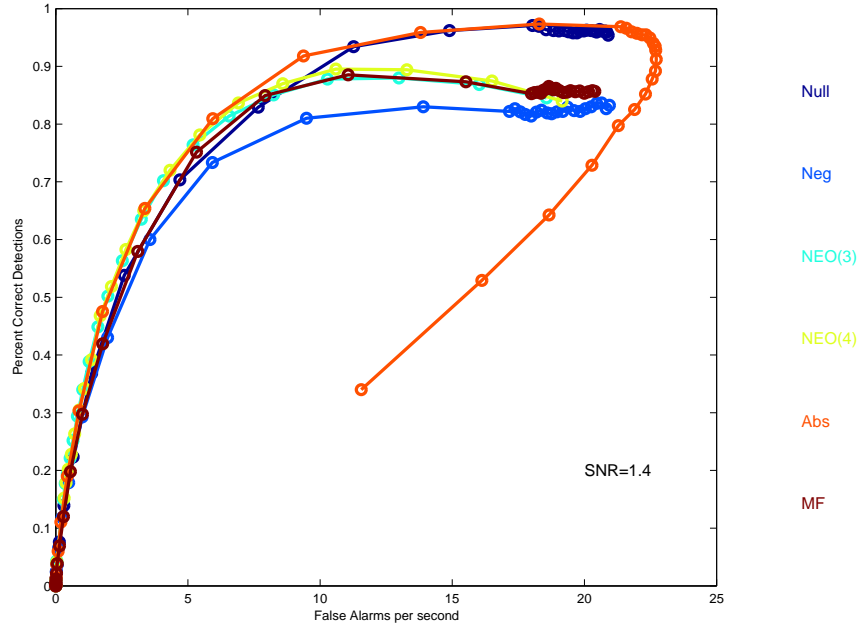
Appendix D

ROC Curves

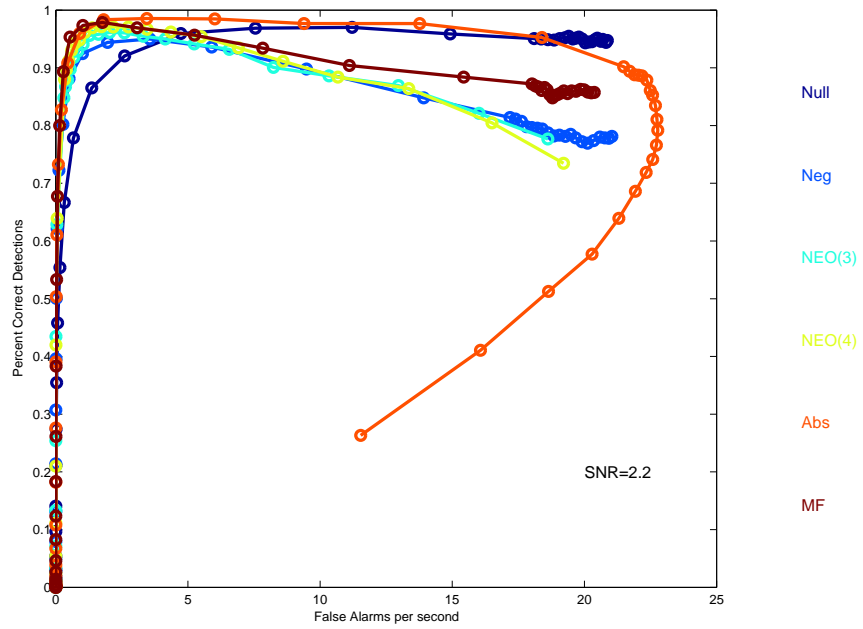
This Appendix shows the ROC curves that correspond to the cost function plots presented in the main text.

D.1 Spike Detection - Artificial Test Data

The figures in this section are the ROC curves corresponding to Figures 2.4 and 2.5. These are the results of testing different preprocessors on the artificial test data. Note that, for clarity, only six of the 17 tested preprocessors are plotted.

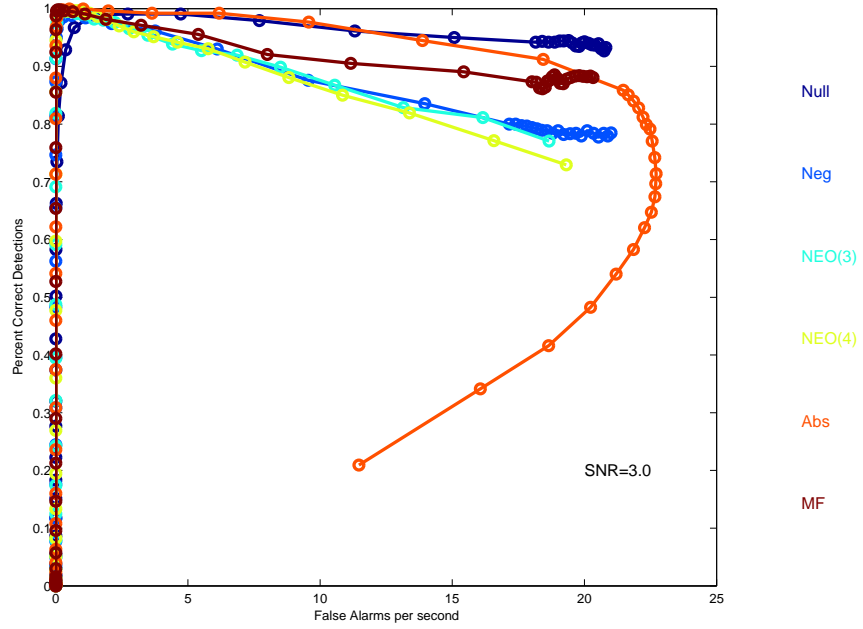


(a)

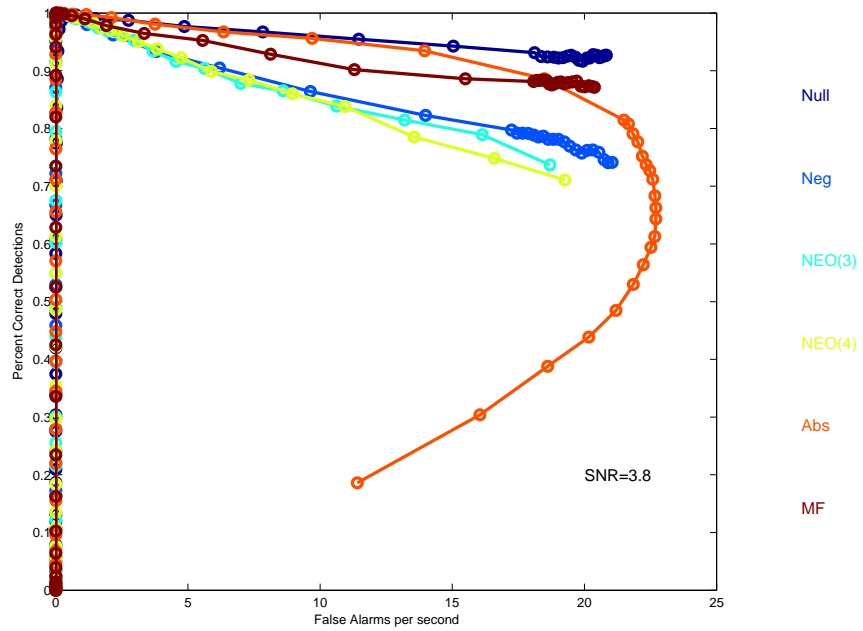


(b)

Figure D.1: ROC curves for artificial test data : (a) SNR=1.4, (b) SNR=2.2



(a)



(b)

Figure D.2: ROC curves for artificial test data : (a) SNR=3.0, (b) SNR=3.8

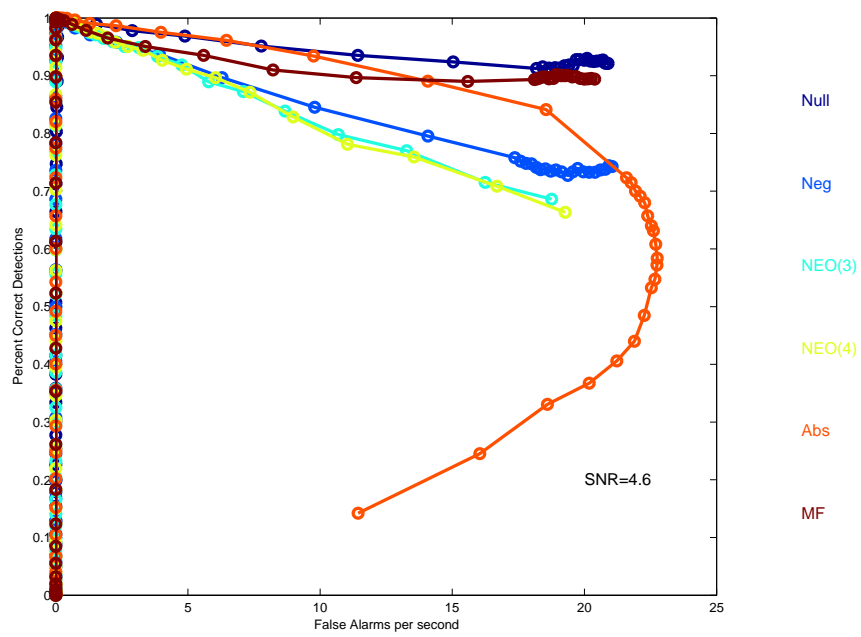
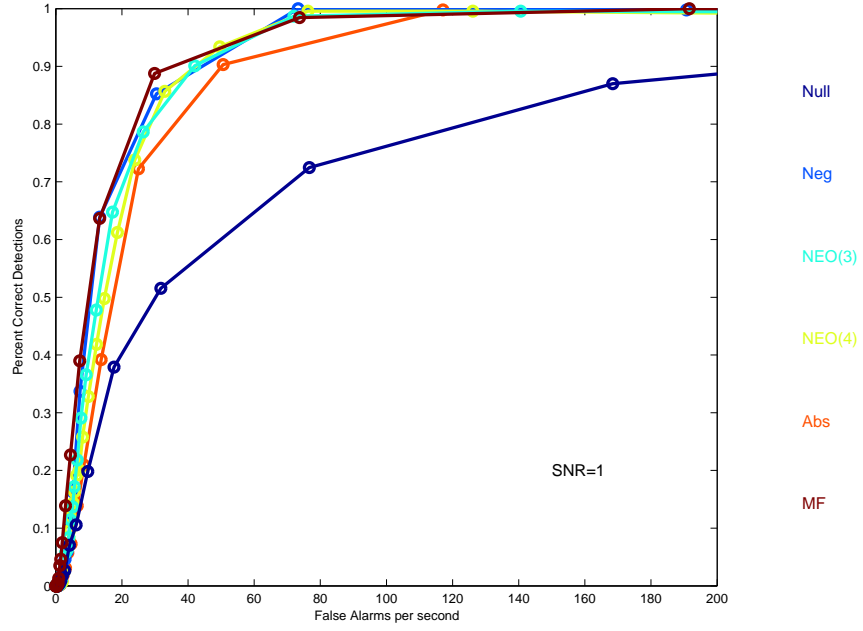


Figure D.3: ROC curves for artificial test data : SNR=4.6

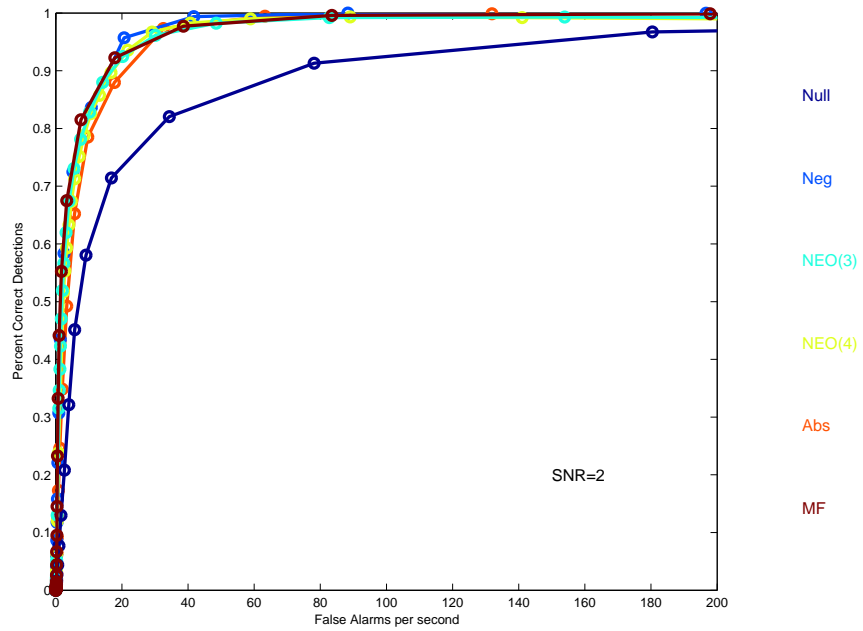
D.2 Spike Detection - *In Vivo Test Data*

The figures in this section are the ROC curves corresponding to Figures 2.6 and 2.7.

These are the results of testing different preprocessors on the *in vivo* test data.

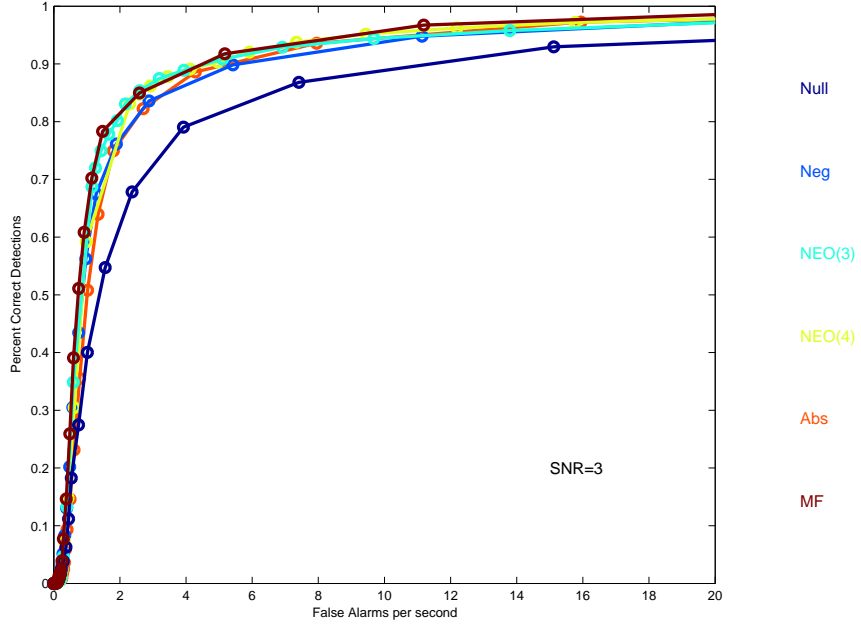


(a)

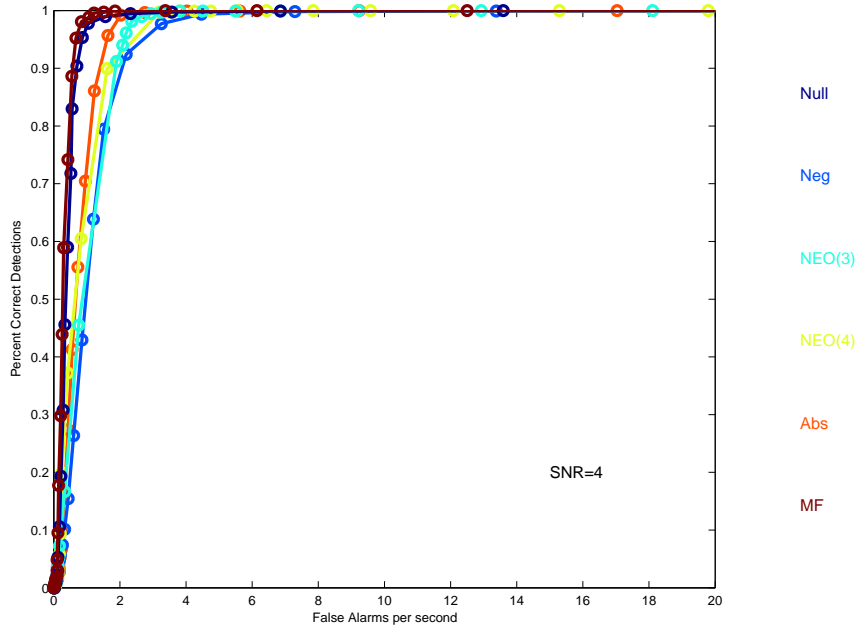


(b)

Figure D.4: ROC curves for the *in vivo* test data : (a) SNR=1, (b) SNR=2

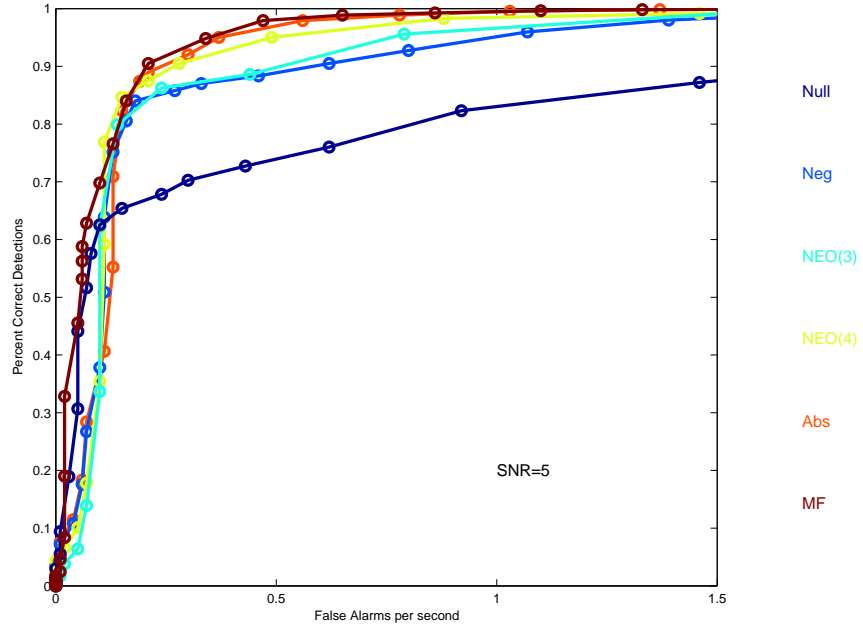


(a)

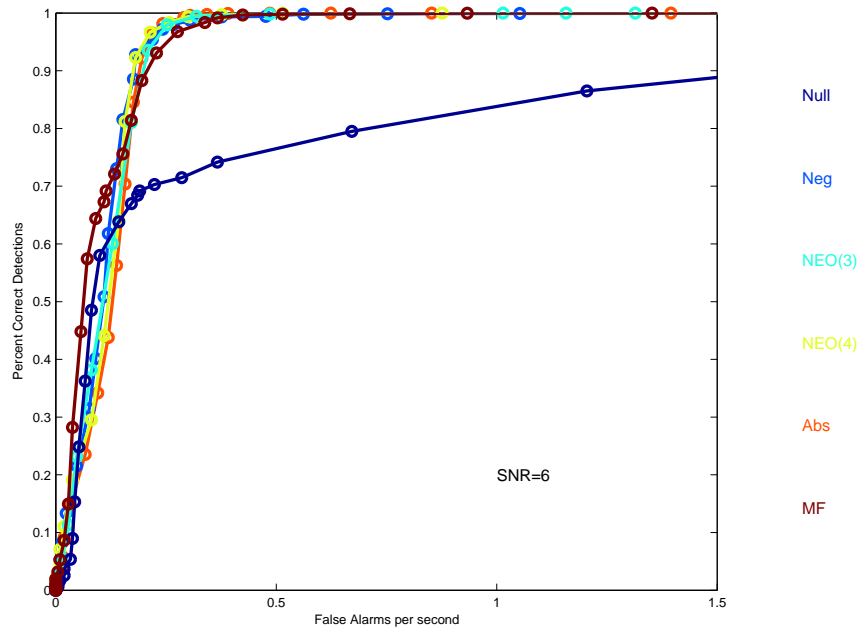


(b)

Figure D.5: ROC curves for the *in vivo* test data : (a) SNR=3, (b) SNR=4



(a)



(b)

Figure D.6: ROC curves for the *in vivo* test data : (a) SNR=5, (b) SNR=6

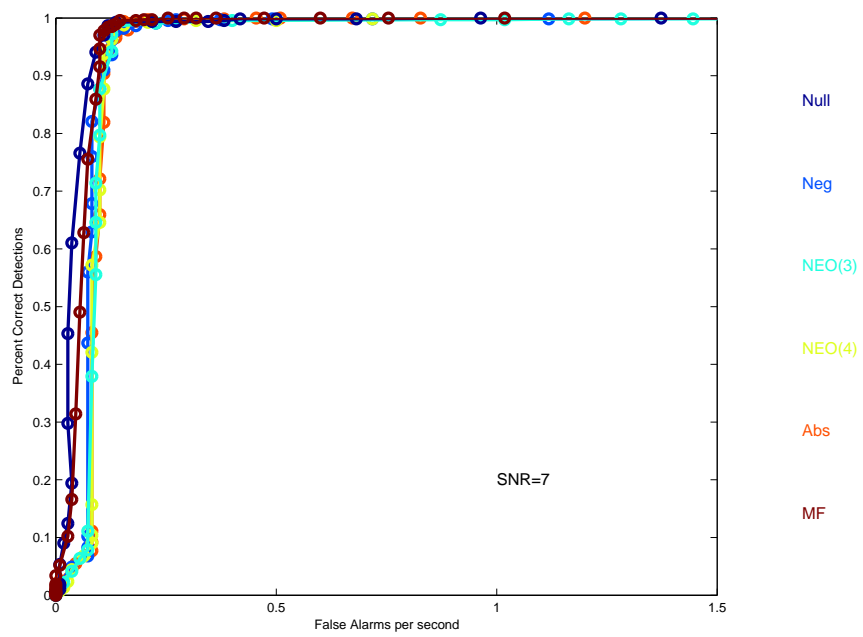
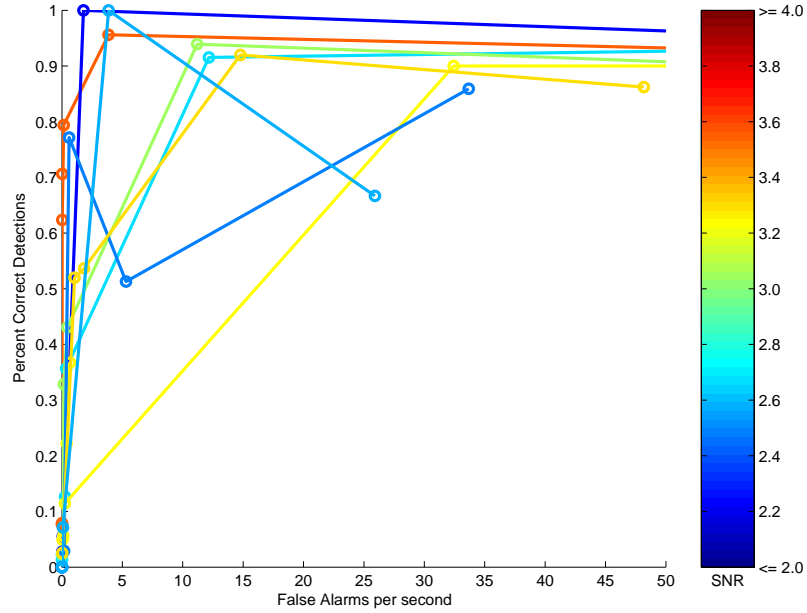


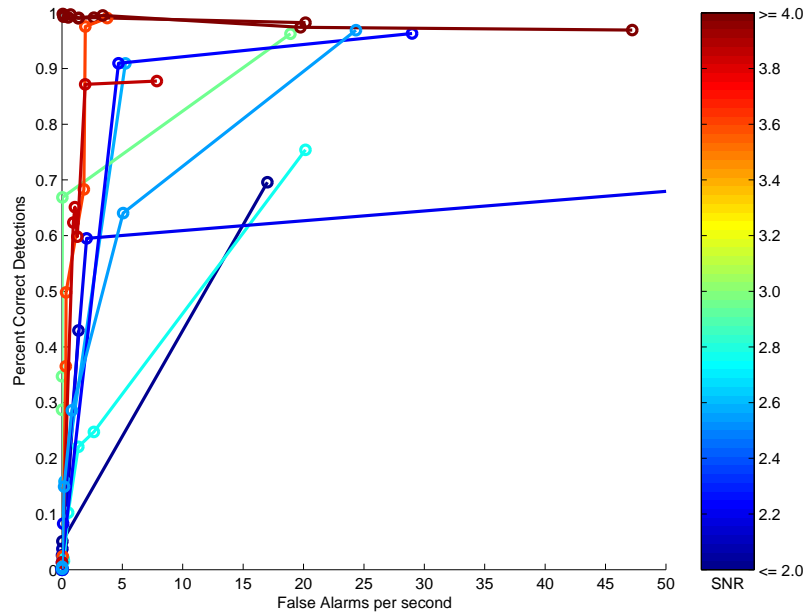
Figure D.7: ROC curves for the *in vivo* test data : SNR=7

D.3 System Evaluation - *In Vivo Test Data*

The figures in this section are the ROC curves corresponding to Figure 4.11. These are the curves produced when the Backpack spike detection hardware was tested *in vivo*.



(a)



(b)

Figure D.8: ROC curves for the Backpack's *in vivo* tests using (a) rats, (b) owl monkeys