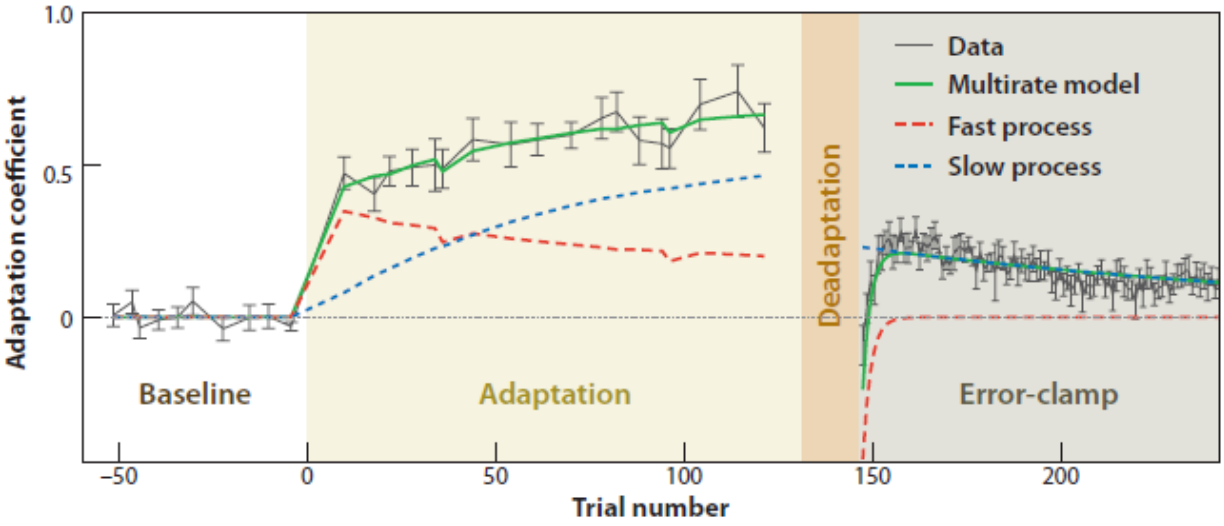
NSCI 401

Final exam questions

(Fall 2014)

1. What is the link between state estimation in optimal feedback control (i.e. Kalman filter) and multi-sensory integration? Explain how both work.
2. Why are voltage-gated ion channels required for spike generation? Why could you not produce action potentials without them?
3. How does the receiver operating curve (ROC) analysis work and why is this a useful analysis?
4. Name 3 examples in which center-excitation/surround-inhibition mechanisms are at play and explain what they do in each example.
5. Why does the Bayesian formalism predict that the brain should never discard information? How then can you avoid that even unrelated pieces of information get integrated?
6. Name two different roles of neural integrators in eye movement control. Why are those crucial?
7. Name 3 different mechanisms that can explain the speed-accuracy trade-off. How do they work?
8. What is the difference between conspicuity, saliency and priority maps?
9. How does auto-associative memory work and what are its properties?
10. Explain what happens here during motor learning and why:



Note: during the exam, there are ***no aids allowed***. Don't forget to bring your Queen's students photo ID to the exam!