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1. Contemporary cognitive neuroscientists utilize many kinds of research tools for their investigation in the brain, acknowledging that each tool has its own strengths and weaknesses. Please illustrate one tool that is better in temporal resolution, and one better in spatial resolution: (a) explain their rationale (e.g., what do their results reflect?), (b) how these results reveal human brain function? and (c) can these findings constrain theories of human cognition? If yes, how? If not, are they useful after all? Or how to make them useful in understanding human mind and brain? (25%)

2. The surge of interest in brain science unveils many unheard phenomenon (or "symptoms") in normal people around (or even in) you. For example, in recent years many people blogged about their realization that they are "prosopagnosic" or "synaesthesic". Can you describe what these two "symptoms" are? Why they themselves are unaware of these problems earlier? And imagine one day your friend, knowing that you are about to study cognitive sciences, confesses to you that they are probably "synaesthesic" or "prosopagnosic", can you, based on your knowledge of experimental design and cognitive tasks, give him/her a test to provide a quantitative evidence to verify their claim? What would their performance be on these tests if they are really prosopagnosic or synaesthesic? (25%)

3. On Dec 2, 2008, H.M. (or Henry G. Molaison), 82, died in Windsor Locks, Connecticut, US. Being the most widely studied and famous case in the neuroscience literature of the 20th and 21st centuries, Mr. Molaison's contributions to knowledge about memory have been groundbreaking, and researchers worldwide are in his debt. Can you describe what happened to H.M. at his twenties, what kind of surgery did he go through, what happened afterwards, why his case is the only single one in the modern neuroscience, and most important of all, what "ground" had his case story broken (or put another way, what was wrong with the early theory of memory that his case study revealed?) (25%)

4. Recent studies on change blindness and consciousness, especially by the content analysis in dream reports, jointly suggest an important theme long ignored by computational vision scientists, or long held by Gibsonian vision scientists. What is this theme? If you are not sure, try to come up your best "educated guess" by detailing the findings in "change blindness", the nature of dream content, basic assumptions held by computational vision scientists, and theories proposed by J. J. Gibson and his followers. (25%)