CSP Module for First Semester 2017 Foundation Course, NIAS PhD Programme

"An Introduction to Mind, its Functions and Purpose"
Credits: 1; Contact hours: 1.5 hours per week
Tutors: NIAS CSP Team members

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The Module on "An Introduction to Mind, its Functions and Purpose" on will focus on the fundamental challenges and questions in the field that pertain to disciplines such as cognitive sciences, computational neuroscience, AI, machine intelligence, neurophilosophy, neuropsychology, animal cognition and social cognition. Course instructors will introduce students to multiple topics in the field.

Date	Tutor	Topic of focus	Description	Reading list
11.08.2017	Sangeetha Menon	SM Lecture 1: Distinguishing Concepts – Body, Mind and Consciousness	In the recent times, the central question that fundamental disciplines such as neuroscience, philosophy and psychology ask about mind are centred on the notion and experience of the person. While an important correlate of consciousness that all disciplines and all people are interested is awareness and different degrees of it, there are other aspects that explain consciousness in finer ways. The character of the person, his or her ability to exercise choice-making, freewill, and take responsibility of the acts and its consequences take us to the realm of social cognition, decision-making, and the wellbeing itself. In this class we will explore basic definitions, functions and nature of the puzzle of consciousness.	Chalmers, D. (1995). The Puzzle of Conscious Experience. Scientific American (273), pp. 62-68. McGinn, C. (1997). The Character of Mind: An Introduction to the Philosophy of Mind. Oxford University Press. Cole, J. (2004). *Still Lives: Narratives of Spinal Cord Injury.* MIT Press.
18.08.2017	VV Binoy	VVB Lecture 1: Social cognition	Life of social species, including human beings, demand higher degrees of cognitive abilities, especially for encoding socially relevant information, consolidating it into memory, retrieving such information while taking decisions regarding him/herself or others, for a stress free life and survival. The importance of the branch of social psychology focusing "mental processes involved in perceiving, attending to, remembering, thinking about", and making sense of the actions and activities of conspecifics and heterospecific individuals, popularly known as social cognition is manifold in this age of enhanced interaction between diverse cultures	Paper 1 Paper 2 Paper 3 Paper 4 Paper 5 Paper 6 Paper 7 Paper 8 Paper 9
25.08.2017	VV Binoy	VVB Lecture 2: Social Cognition		

			brought in by the modern technologies that helped the humankind to tide over the spatial and temporal constrains. The two-lecture module will elaborate various dimensions of social cognition such as perception of social contexts, mechanisms and neural correlates of meaning making, familiarity and social memory, personality traits, theory of mind, influence of culture on cognition, social decision-making etc. and its implication for the wellbeing of both humans and other social organisms.	
1.09.2017	Nithin Nagaraj	NN Lecture 1: Introduction to Complexity Theories of Consciousness	Decoding the nature and character of consciousness has remained a *hard* problem in spite of tremendous advances in theoretical, computational and cognitive neuroscience. Given the unique role played by the brain in our experience, a number of brain-based measures of consciousness have been proposed in the past decade, each having their own theoretical basis and experimental validation. Several of these measures are based on different notions of dynamical complexity of brain networks (for eg., information integration, causal density and neural complexity). We shall take a tour of these latest exciting developments in the 'Complexity Theories of Consciousness', the promises they hold and the challenges they face.	1. Seth AK, Dienes Z, Cleeremans A, Overgaard M, Pessoa L. Measuring consciousness: relating behavioural and neurophysiological approaches. Trends in cognitive sciences. 2008;12(8):314–321.
8.09.2017	Nithin Nagaraj	NN Lecture 2: Introduction to Complexity Theories of Consciousness		2. Oizumi M, Albantakis L, Tononi G. From the Phenomenology to the Mechanisms of Consciousness: Integrated Information Theory 3.0. PLoS Comput Biol. 2014;10(5):1–25.

3. Casali AG, Gosseries O, Rosanova M, Boly M, Sarasso S, Casali KR, et al. A Theoretically Based Index of Consciousness Independent of Sensory Processing and Behavior. Science Translational Medicine. 2013;5(198):198ra105–198ra105.

4. Tononi G. An information integration theory of consciousness. BMC Neuroscience. 2004;5(1):1–22. doi:10.1186/1471-2202-5-42.

5. Tononi G, Edelman GM. Consciousness and complexity. science. 1998;282(5395):1846–1851.

6. Tononi G, Sporns O, Edelman GM. A measure for brain complexity: relating functional segregation and |

integration in the nervous system. Proceedings of the National Academy of Sciences. 1994;91(11):5033–5037.

7. Seth AK, Barrett AB, Barnett L. Causal density and integrated information as measures of conscious level. Philosophical Transactions of the Royal Society of London A: Mathematical, Physical and Engineering Sciences. 2011;369(1952):3748–3767.

8. Tononi G, Sporns O. Measuring information integration. BMC Neuroscience. 2003;4(1):1–20. doi:10.1186/1471-2202-4-31.

9. Tononi G. Consciousness, information integration, and the brain. Progress in brain research. 2005;150:109–126.

Date	Lecturer	Lecture	Description	Papers
15.09.2017	Anindya Sinha	AS Lecture 1: Nonhuman Cognition and Consciousness: A Primate's View	Social primates appear to be knowledgeable about one another's behaviour to different extents. But do they know as much about one another's beliefs and intentions? Are they adept at recognising the similarities and differences between their own and others' states of mind? What are the mental mechanisms that allow them to establish cultural traditions? Attribution of mental states to other individuals could manifest itself in diverse situations as, for example, when individual animals closely observe the actions of others or when they deceive each other in the social sphere. Explorations into the phenomena of social learning and phenotypic flexibility also contribute to our understanding of distributed cognition, a relatively new approach that treats behavioural coordination and communicative interactions in primates as directly observable cognitive events. Can consciousness be defined in non-verbal primates? What characterises nonhuman primate consciousness? This module will examine some of the theoretical and philosophical issues in	Paper 1 Paper 2 Paper 3 Paper 4 Paper 5 Paper 6
22.09.2017 [this lecture would be advanced and rescheduled for 19.09.2017: Please contact the Tutor for further info]	Anindya Sinha	AS Lecture 2: Nonhuman Cognition and Consciousness: A Primate's View		

Date	Faculty	Lecture	Abstract	References
			animal cognitive psychology, with a particular focus on our understanding of social cognition in wild bonnet macaques, a primate species found commonly in peninsular India.	
29.09.2017	Sisir Roy	SR Lecture 1: Mind and Decision-making	The process of making a decision is a deliberative process whose ultimate goal is the results in the commitment to a categorical proposition. A closest analogy to this process is a judge or jury that must take time to weigh the evidences for there is always possible a set of alternatives, among which one needs to choose a preferred option or course of action out of this set of alternatives. Since decision making is a basic mental process, the decision with precision is one of the fundamental requirements for cognitive processes of human beings. Hence, it is necessary to model the uncertainty so as to make a precise decision.	Yingxu Wang, Guenther Ruhe(2007)The Cognitive Process of DecisionMaking : Int'l Journal of Cognitive Informatics and Natural Intelligence, 1(2), 73-85
6.10.2017	Sisir Roy	SR Lecture 2: Mind and Decision-making		Roberts, F. S. (1979); Measurement theory with applications to decision making, utility and the social sciences.; London, UK: Addison-Wesley.
				Nick Chater, Joshua B.Tenebaum and Alan Yulle,p(2006).; Probabilistic models of cognition : conceptual foundations : Trends in cognitive sciences,10(7), 287-291
				Körding KP, Wolpert DM (2006); "Bayesian decision theory in sensorimotor control." Trends Cogn. Sci, 10(7):319-26.
13.10.2017	LM Patnaik	LMP Lecture 1: Introduction to Machine Intelligence	Intelligence, among other things, involves the ability to reason, solve problems, learn from experience, and plan. Artificial intelligence is a field that studies how to realise the intelligent human behaviour on a computer. How we may be able to replicate intelligence in computers is a challenging problem. Although the subject has been studied for more than half a century, we still cannot make a computer as intelligent as a human being in all aspects. We will introduce some basic concepts of testing of intelligent behaviour, problem solving, knowledge representation, learning algorithms; without discussing too much of the formal principles.	Elaine Rich, Kevin Knight, Shivashankar B Nair, Artificial Intelligence (Third Edition),Tata Mc Graw-Hill Education Pvt Ltd,2008.
20.10.2017	LM Patnaik	LMP Lecture 2: Introduction to Machine Intelligence		Artificial Intelligence: A Modern Approach, Stuart J Russell and Peter Norvig, Third Edition, Prentice Hall,2009.

21.10.2017	Sangeetha Menon	SM Lecture 2: Science and Signs of Self	This class will help raise fundamental questions that connect behaviour with the body and the self. We will do a critical appraisal of some of the mainstream thinking in neuroscience, and neuropsychology, on body, experience, and consciousness. In the process, we will try and develop an open-ended thinking pattern to develop basic concepts in conceiving the exteriority of the self and interiority of the body, in the light of studies on the subjective nature of consciousness. Some of the questions that will engage us in this discussion are: 1. What is body? Is it interior, exterior, or both? 2. What is self? Is it interior, exterior, or both? 3. How is body different from self? 4. What is personal identity? 5. Does experience belong to body or self? 6. What is body-sense constituted of? 7. What is self-sense constituted of? 8. To which sense does 'experience' belong? 9. What is experience? Who owns it? Who is the agent? 10. Is there a minimal self? 11. Is there an extended self? 12. Is self a 'bland' entity or is it rich with feelings, emotions, perspectives, free-will and purpose-orientation? 13. Why is it important to distinguish body from self? 14. What is behaviour? Are we mechanistic entities who have behaviours and controlled by genetically and environmentally determined factors? 15. Who is a person? Are behaviourism and behaviour oriented approach adequate to represent human self-hood? Is 'behaviour' an out-dated expression with a biological overload but less humanistic tones?	Gallagher, S. (2000). Philosophical Conceptions of the Self: Implications for Cognitive Science. *Trends in the Cognitive Sciences, 4*(1), 14-21. Metzinger, T. (2003). *Being no One: The Self-model Theory of Subjectivity.* MIT Press. Science of Consciousness Minimal Self William James' concept of Self
28.10.2017	All of the above	Written assignments or/and presentations	Evaluation by tutors	