

Date	Day of the Week	Topic	Papers	Presenter	Discussant 1	Discussant 2	Discussant 3	Discussant 4
January 5, 2021	Tuesday	Class Orientation	Introduction to CNS/Bi 247 Cerebral Cortex	Prof. Richard Andersen; Isabelle Rosenthal	N/A	N/A	N/A	N/A
January 7, 2021	Thursday	Somatosensory Cortex	Makin, T.R., and Bensmaia, S.J. (2017). Stability of Sensory Topographies in Adult Cortex. Trends in Cognitive Sciences 21, 195–204. doi: 10.1016/j.tics.2017.01.002 Further Reading: Matyas, F., Sreenivasan, V., Marbach, F., Wacongne, C., Barsy, B., Mateo, C., Aronoff, R., and Petersen, C.C. (2010). Motor control by sensory cortex. Science 330, 1240–1243.					
January 12, 2020	Tuesday	Neuroprosthetics I: Control	Aflalo, T., Kellis, S., Klaes, C., Lee, B., Shi, Y., Pejsa, K., Shanfield, K., Hayes-Jackson, S., Aisen, M., Heck, C., et al. (2015). Decoding motor imagery from the posterior parietal cortex of a tetraplegic human. Science 348, 906–910. Collinger, J.L., Wodlinger, B., Downey, J.E., Wang, W., Tyler-Kabara, E.C., Weber, D.J., McMorland, A.J., Velliste, M., Boninger, M.L., and Schwartz, A.B. (2013). High-performance neuroprosthetic control by an individual with tetraplegia. The Lancet 381, 557–564.					
January 14, 2021	Thursday	Neuroprosthetics II: Stimulation	Flesher, S.N., Collinger, J.L., Foldes, S.T., Weiss, J.M., Downey, J.E., Tyler-Kabara, E.C., Bensmaia, S.J., Schwartz, A.B., Boninger, M.L., and Gaunt, R.A. (2016). Intracortical microstimulation of human somatosensory cortex. Science Translational Medicine aaf8083. Salas, M.A., Bashford, L., Kellis, S., Jafari, M., Jo, H., Kramer, D., Shanfield, K., Pejsa, K., Lee, B., Liu, C.Y., et al. (2018). Proprioceptive and cutaneous sensations in humans elicited by intracortical microstimulation. ELife Sciences 7, e32904.					
January 19, 2021	Tuesday	Mixed Selectivity	Fusi, S., Miller, E.K., and Rigotti, M. (2016). Why neurons mix: high dimensionality for higher cognition. Current Opinion in Neurobiology 37, 66–74. Zhang, C.Y., Aflalo, T., Revechkis, B., Rosario, E.R., Ouellette, D., Pouratian, N., and Andersen, R.A. (2017). Partially Mixed Selectivity in Human Posterior Parietal Association Cortex. Neuron 95, 697–708.e4. Further Reading: Rigotti, M., Barak, O., Warden, M.R., Wang, X.-J., Daw, N.D., Miller, E.K., and Fusi, S. (2013). The importance of mixed selectivity in complex cognitive tasks. Nature 497, 585–590.					
January 21, 2021	Thursday	Semantics I	Huth, A.G., de Heer, W.A., Griffiths, T.L., Theunissen, F.E., Gallant, J.L. (2016). Natural speech reveals the semantic maps that tile human cerebral cortex. Nature 532: 453–458					
January 26, 2021	Tuesday	Semantics II	Lambon Ralph, M.A., Jefferies, E., Patterson, K., and Rogers, T.T. (2016). The neural and computational bases of semantic cognition. Nature Reviews Neuroscience 18, 42–55. doi: 10.1038/nrn.2016.150					
January 28, 2021	Thursday	Language	Anumanchipalli, G.K., Chartier, J., and Chang, E.F. (2019). Speech synthesis from neural decoding of spoken sentences. Nature 568, 493–498.					
February 2, 2021	Tuesday	Physical Intuition	Fischer, J., Mikhael, J.G., Tenenbaum, J.B., and Kanwisher, N. (2016). Functional neuroanatomy of intuitive physical inference. PNAS 113(34) E5072–E5081					
February 4, 2021	Thursday	Posture Encoding I	Mimica, B., Dunn, B.A., Tombaz, T., Bojja, V.P.T.N.C.S., and Whitlock, J.R. (2018). Efficient cortical coding of 3D posture in freely behaving rats. Science 362, 584–589.					
February 9, 2021	Tuesday	Posture Encoding II	Chowdhury, R.H., Glaser, J.I., and Miller, L.E. (2020). Area 2 of primary somatosensory cortex encodes kinematics of the whole arm. eLife 9:e48198. doi: 10.7554/eLife.48198					
February 11, 2021	Thursday	Volition and Awareness	Fornia, L., Puglisi, G., Leonetti, A., Bello, L., Berti, A., Cerri, G., and Garbarini, F. (2020). Direct electrical stimulation of the premotor cortex shuts down awareness of voluntary actions. Nature Communications 11, 705. doi: 10.1038/s41467-020-14517-4 Desmurget, M., Richard, N., Beuriat, P.-A., Szathmari, A., Mottolese, C., Duhamel, J.-R., and Sirigu, A. (2018). Selective Inhibition of Volitional Hand Movements after Stimulation of the Dorsoposterior Parietal Cortex in Humans. Current Biology 28, 3303–3309.e3.					
February 16, 2021	Tuesday	Decision Making	Kang, Y.H.R., Petzschner, F.H., Wolpert, D.M., and Shadlen, M.N. (2017). Piercing of consciousness as a threshold-crossing operation. Current Biology 27, 2285–2295.					
February 18, 2021	Thursday	Spontaneous movements	Musall, S., Kaufman, M.T., Juavinett, A.L., Gluf, S., and Churchland, A. K. (2019). Single-trial neural dynamics are dominated by richly varied movements. Nature Neuroscience 22, 1677–1686.					
February 23, 2021	Tuesday	Object Recognition I	Bao, P., She, L., McGill, M., and Tsao, D. (2020). A map of object space in primate inferotemporal cortex. Nature 583, 103–108.					
February 25, 2021	Thursday	Object Recognition II	Kar, K., Kubilius, J., Schmidt, K., Issa, E.B., and DiCarlo, J.J. (2019). Evidence that recurrent circuits are critical to the ventral stream’s execution of core object recognition behavior. Nature Neuroscience 22, 974–983.					
March 2, 2021	Tuesday	Memory	Minxha, J., Adolphs, R., Fusi, S., Mamelak, A.N., and Rutishauser, U. (2020). Flexible recruitment of memory-based choice representations by the human medial frontal cortex. Science 368(6498).					
March 4, 2020	Thursday	Learning I	Eichenlaub, J.-B., Jarosiewicz, B., Saab, J., Franco, B., Kelemen, J., Halgren, E., Hochberg, L. R., and Cash, S.S. (2020). Replay of Learned Neural Firing Sequences during Rest in Human Motor Cortex. Cell Reports 31(5): 107581.					
March 9, 2020	Tuesday	Learning II	Sakellari, S., Christopoulos, V.N., Aflalo, T., Pejsa, K., Rosario, E.R., Ouellette, D., Pouratian, N., and Andersen, R.A. (2019). Intrinsic variable learning for brain-machine interface control by human anterior intraparietal cortex. Neuron 102, 694–705.					