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| Course Name [科目名] | Pattern Recognition and Machine Learning |
| Instructor Name [教員] | Cuong Tuan Nguyen, Seiji Hotta, Masaki Nakagawa |
| Course Credits [単位数] |  |
| Course Overview [概要] | Pattern recognition classifies, identifies or recognizes symbols, structures or any type of information represented, conveyed or even hidden in a set of signals which are redundant and often noisy. It is theoretically and scientifically important to learn human abilities of pattern recognition and practically important to realize smooth human machine interaction. |
| Course Key Words [キーワード] | Feature extraction, Discriminant functions, Statistical methods, Syntactic methods, Neural Networks, Machine Learning, Artificial Intelligence |
| Academic Goal [目標] | Understanding basic mathematics, methods and algorithms. |
| Course Schedule [授業内容] | What are patterns, what is pattern recognition?  Findings from Pathology, Neurophysiology and Cognitive Science  Pattern Recognition by Computers  Statistical Methods and Syntactic Methods  Feature Extraction and Normalization  Discriminant Functions  Clustering and Prototype Learning  Neural Networks and Machine Learning  Convolutional Neural Networks  Recurrent Neural Networks  Practice of Pattern Recognition |
| Textbooks, References,  and Supplementary Materials  [テキスト、参考書、その他] | Duda, Hart, Stork: Pattern Classification, John Wiley & Sons, Inc.  Bishop, Pattern Recognition and Machine Learning, Springer  Texts and simple codes will be provided via a website. |
| Grading Philosophy  (Percentage / Criteria / Methodology)  [成績評価の方法] | Attendance (10%), Home works (30%), Examinations (60%) |
| Other  (i.e. Expectations on Classroom  Conduct and Decorum etc.)  [その他] |  |