Advanced Probabilistic Machine Learning and Applications: general information

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- **Logistics:**
  - **Website**: https://github.com/APMLA/apmla_material
  - **Plan 2019/20**: 14 Oct 2019 - 9 Feb 2020, 15 weeks, 4hr/week, 15 weeks, 60hr
  - **Lecture**: Tuesdays **[News]**: 14:15-16pm at TTR2 in Cyber Valley Campus
  - **Tutorial**: Wednesdays 16:15-18pm at TTR2 in Cyber Valley Campus
  - **Registration**: NEED to register the exam either via Campus / ALMA or written if the student cannot register online.
- **Grading:**
  - 70% written exam
  - 30% exercises from tutorials.
- **Feedback survey:** After every lecture, there will be a survey for the students to fill. The results will be summarized at the beginning of the next class.
- **Tentative program and schedule:**
  - **15 Oct** Introduction to probabilistic machine learning (both) –> Tutorial: Written exercises
    Reference: Chapter 2 up to Section 2.3.6 and Section 8.2 of Bishop (2006)
  - **22 Oct** Gaussian Mixture Model (GMM) + Expectation Maximization (Valera) –> Tutorial: Coding exercise
    Reference: Section 9.2 of Bishop (2006)
  - **29 Oct** DP- GMM + Gibbs Sampling (Valera) –> Tutorial: Coding exercise
  - **5 Nov** Hidden Markov Models (HMMs) + Gibbs (Valera) –> Tutorial: Coding exercise
  - **12th Nov** Temporal point Processes (TPPs) I (Valera) –> Tutorial: Written exercises
  - **19th Nov** TPPs + Sequential Monte Carlo (Valera) –> Tutorial: data science excercise
  - **26th Nov** Mean Field approach (De Bacco) –> Tutorial: Written exercises
  - **3rd Dec** TAP (De Bacco) –> Tutorial: Written exercises
  - **10th Dec** Review and Spin glass planted I (De Bacco) –> Tutorial: Written exercises
  - **17th Dec** Spin glass planted (BP) (De Bacco) –> Tutorial: data science
  - **7th Jan** MM-SBM + EM/BP (De Bacco) –> Tutorial: data science
  - **14th Jan** GMMs + Variational Inference (VI) (De Bacco) –> Tutorial: Coding exercise
  - **21st Jan** VI + LDA (De Bacco) –> Tutorial: Data science
  - **28st Jan** Stochastic VI (Valera) –> Tutorial: Coding exercise
  - **4th Feb** Variational Autoencoders (Valera) –> Tutorial: Witten exercise

References

C. M. Bishop, *Pattern recognition and machine learning* (Springer, 2006).