

## Schedule for lectures in MMA - Winter 2020

1. **Introduction**
2. **Model**
3. **Estimation (I)**
  - (a) Bayes rule
4. **Estimation (II)**
  - (a) Regression model  
*On-line and batch estimation*
5. **Estimation (III)**
  - (a) Categorical (discrete) model
  - (b) Logistic regression
6. **Prediction (I)**
  - (a) Prediction with regression model  
*Zero step prediction with unknown parameters*
7. **Prediction (II)**
  - (a) Multi step point prediction  
*In pdf and point prediction*
  - (b) Full prediction with normal regression model
  - (c) Prediction with discrete model
8. **State estimation (I)**
  - (a) State-space model
  - (b) State estimation in pdf
  - (c) Kalman filter
9. **State estimation (II)**
  - (a) Nonlinear state-space model
  - (b) Model with unknown parameter
10. **Control (I)**
  - (a) Bellman equations
11. **Control (II)**
  - (a) Control algorithm for regression model
  - (b) Control with categorical model
12. **Adaptive control**

## Schedule for exercises in MMA - Winter 2020

1. **Introduction**  
Scilab
2. **Model**  
T11simCont; T13simDisc;
3. **Estimation (I)**  
T15simState; T21estCont\_LS
4. **Estimation (II)**  
T22estCont\_B; T22estCont\_B2; T22estCont\_B3; T22estCont\_B4
5. **Estimation (III)**  
T23estDisc
6. **Prediction (I)**  
T31preCont
7. **Prediction (II)**  
T32preCont\_Adapt
8. **State estimation (I)**  
(pre) T32preCont\_Adapt2; T32preCont\_Adapt3;
9. **State estimation (II)**  
– (pre)<sup>1</sup> T33preCat\_Off; T34preCat\_OffEst; T35preCat\_OnEst
10. **Control (I)**  
– (stat) T46statEst\_KF; T47statEst\_Noise
11. **Control (II)**  
T53ctrlX
12. **Adaptive control**  
T54ctrlXEst; T52ctrlDisc

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<sup>1</sup>– means: nothing for this topic; (···) means: belongs to the topic