Exercise 9a (optional): Dynamic Systems in Your Life
(to be returned on Jan. 7., 2015, 8:15 in HS 26, or before in building 102, 1st floor, 'Anbau')

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This sheet is optional, if you want to informally think about dynamic system models before or during the christmas break.

Exercise Tasks

1. Describe three dynamic systems with time varying inputs and outputs that you find personally interesting. For each of the three systems, indicate which inputs can influence the system, and which outputs of interest one could measure.

2. For each of the systems, make one first step towards finding a suitable model, e.g. by discussing what internal quantities could become the states of the system, or which conservation laws could help to model the system, or by indicating in which scientific disciplines you could find part of the answer, or by proposing a black-box model structure that you find suitable for modelling the input-output behaviour of the system.

This sheet gives 6 bonus points that will be added to Sheet 9 in January.

Announcement:

TEMPO Spring School (3 ECTS) on
Theory and Numerics for Nonlinear Model Predictive Control

March 25 - April 2, 2015,
University of Freiburg, Kollegiengebäude I, HS 1015, Platz der Universität 3, D-79098 Freiburg

The aim of this intensive 6-day course is to give a complete overview on Nonlinear Model Predictive Control (NMPC). On the one hand, the theoretical foundations for this control technique will be treated from the point of view of systems theory. On the other hand, participants will be taught how to efficiently and reliably formulate and solve numerically NMPC problems for practical applications. One day before the course, an optional Python preparation course is given. Teachers: James B. Rawlings (U Wisconsin, Madison), Joel Andersson, Mario Zanon and Moritz Diehl (U Freiburg and KU Leuven).

Participation in the course is free of charge, while food and coffee and the optional excursion will require minor cost contributions. To apply for a place in the course, or obtain additional information, please write an email to `Christine.Paasch@imtek.uni-freiburg.de` with subject "TEMPO NMPC School Registration" before February 1st, 2015. More information can be found on

`https://www.imtek.de/professuren/systemtheorie/events/tempospringschool/`

We wish you a happy christmas holiday and a good start of the year 2015!