Master Informatique, Mathématiques, Multimédia & Télécommunications
Spécialité « informatique »
Spécialité « Réseaux de Télécommunications, Multimédia et Automatique »

Proposition de sujet de Stage Recherche 2017-2018

Titre : A MATLAB Toolbox for MIMO model identification

Laboratoire : LIAS - ENSIP

Encadrant(s) : Guillaume Mercère

Mots clés : data-driven modeling, Multi-Input Multi-Ouput, State-Space Representation, Matrix Fraction Description, Linear Fractional Representation

Sujet : As described in [Val14c, Val16, VMP16], new solutions for MIMO model identification have been introduced. Such developments consider either black-box Matrix Fraction Description or gray-box State-Space Representation. It is now time to make the access to these news model identification tools easier by developing a dedicated MATLAB Toolbox with a user-friendly GUI.
The main goal of this project is to develop such a MATLAB GUI. A specific attention will be paid to
- the perfect understanding of the algorithms developed in the afore-mentioned papers,
- the use of functions already implemented in MATLAB in order to benefit from their efficiency as much as possible,
- the ability to keep the functions up-to-date after the project,
- the quality of the online assistance.

[Val14c] Frequency-domain identification of aircraft structural modes from short-duration flight tests, J. Vayssettes, G. Mercère, P. Vacher and R. De Callafon, International Journal of Control, 2014, pp. 1352-1372, Vol. 87
[VMP16] New developments for Matrix Fraction Descriptions: a fully-parametrised approach, J. Vayssettes, G. Mercère. and O. Prot, Automatica, 2016 pp. 15-24, Vol. 66
[Val16] H_∞-norm-based optimization for the identification of gray-box LTI state-space model parameters, D. Vizer, G. Mercère, O. Prot and E. Laroche, Systems and Control Letters, 2016, pp. 34-41, Vol. 92

Lieu du stage : LIAS B25
Parcours conseillé : identification des systèmes
UEs optionnelles conseillées :