Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : **FLORENTIN**   Given names : **ERIC**

Status (prof., assistant prof., …) : **Prof.**

Laboratory : **Laboratoire Gabriel Lamé**   Website address : **https://www.mechlabgabriellame.fr**

Institution : **INSA Centre Val de Loire**   Website address : **www.insa-centrevaldeloire.fr**

Scientific competence of the supervisor:

Verification and Validation, Error estimation, Finite Element Analysis, Identification, Stochastic simulations, Reduced models

Two major publications in the field proposed for the PhD :

1. L. Gallimard, E. Florentin, D. Ryckelynck. Towards error bounds of the failure probability of elastic structures using reduced basis models. International Journal for Numerical Methods in Engineering. n°112, issue 9,

2. E. Florentin, P. Diez. Adaptive reduced basis strategy based on goal oriented error assessment for stochastic problems. Computer Methods in Applied Mechanics and Engineering, n°225-228, p 116--127 (2012)

Website address of the personal page :

Supervisor's email : eric.florentin@insa-cvl.fr

Description of the research work proposed for a PhD   *Topic # (see list) :* IV-6

Title : **Toward certified metamodels for mechanical engineering**

Subject :

Nowadays the power of computer allows to simulate physical phenomena of increasing complexity to model in detail physical phenomena. In the other hand simple models are also needed in order to take decision rapidly, or simply to be implemented on connected devices.
Different numerical techniques are available to develop simplifications and reduce the cost, but they introduce an error due to this surrogate model.

In this work, we study the efficiency of numerical methods employed in this framework. In particular, we are interested in studying errors due to approximations done. The goal is to develop techniques that improve the computation quality of different metamodels and preserve the computational cost. The results can be useful in different fields : dimensioning, identification…

Keywords :

Finite element analysis, metamodel , numerical method

Expected collaborations :

Background required from the applicant :

Motivated student with good academic performance.
Good knowledge of numerical techniques and computation in structural mechanic.
Skills in programming.

Existence of a PDF file detailing the proposal ("yes" or "no") : YES

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