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. Y. Wei, Q. Serra, G. Lubineau, E. Florentin. Coupling physics-informed neural networks and constitutive relation error concept to solve a parameter identification problem. Computers and Structures. N°283 (2023)

2. Y. Wei, F. Vazeille, Q. Serra, E. Florentin. Hybrid Polynomial Chaos Expansion and proper generalized decomposition approach for uncertainty quantification problems in the frame of elasticity. Finite Elements in

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 : Advanced methods for solving finite element problems in mechanical engineering.

Subject :

Power of computer allows to simulate complex phenomena in the field of mechanical engineering. Different numerical techniques are available to develop simplifications and reduce the cost, but they introduce different errors.

In this work, we adapt different parameters of simplified numerical methods to improve the quality of the approximated method. In particular, we are interested in correcting the different errors due to approximations done. The main objective 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 of mechanical engineering.

Keywords :

Numerical method, Finite element analysis, Metamodel.

Expected collaborations :

Background required from the applicant :

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

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

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