Tianyi LI

PhD, R&D engineer in multiphysics, numerical simulation and scientific computing

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EXPERIENCES

Research and Development Engineer — permanent (*CDI*)

Promold — *PME* – consulting in industrial simulation

Apr – Aug 2013, Apr 2017 – now Paris 9e, FRANCE

- Fiber orientation modeling for process (injection molding) simulation of fiber-reinforced polymers with **Moldflow** and **Moldex3D**
- Integrative structural analysis under **Optistruct** / **Radioss** / **code_aster** with process-induced microstructural properties using **Digimat**
- Improved multiscale rheological (fluid) and thermomechanical (solid) modeling of fiber-reinforced polymers: anisotropic viscosity, fiber orientation, structural buckling, porosity prediction and material failure behavior
- Material model implementation for process simulation using **C++**, and for structural analysis using **UMAT** / **Fortran**
- Uncertainty propagation for injection molding simulations using **OpenTURNS** and *data-driven* techniques (model reduction, sampling…)
- Development of various GUI-based simulation tools using **Python** / **C++**
  - Implementing an integrative simulation methodology between process and product structural analysis
  - Implementing a novel global adaptive optimization methodology of fiber orientation model parameters for a better correlation with experiment
  - For buckling analysis of anisotropic fiber-reinforced materials (with finite element library **FEniCS** and eigenvalue solver **SLEPc**)
- Development of scientific computing tools: procedure automation under **HyperWorks** using **TCL**; **Docker** deployment for launching simulations across systems; post-processing of simulation results under **ParaView** with **Python**; statistical data analysis and visualization under **Python/Jupyterlab**

Junior Research Engineer (PhD Candicate) — fixed term (*CDD*)

IMSIA (CNRS-EDF-CEA) — *PME* – applied research lab

Oct 2013 – Sep 2016 Palaiseau (91), FRANCE

- Dynamic fracture modeling of brittle materials for concrete structures, with a novel non-local constitutive behavior for a better prediction and understanding of crack propagation behavior
- Structural analysis, and model implementation in an industrial explicit dynamics finite element program **Europlexus** using **Fortran**
- Design and implementation of parallel computing architecture using **MPI** and **PETSc** under **Europlexus**, quasi-perfect scaling efficiency achieved
- Contributions to the open-source scientific computing libraries **FEniCS** and **PETSc** using **C++**

Structural Analysis Engineer — intern

Faurecia Interior Systems — *GE* – automotive equipment supplier

Sep 2012 – Feb 2013 Méru (60), FRANCE

- Elastoplastic constitutive modeling of long-fiber reinforced thermoplastics for the automobile industry, better agreement with experiment achieved
- Numerical analysis and model implementation using **Python**
- Static, modal and dynamic structural analysis under **Abaqus**

Mechanical Design Engineer — intern

AML-Systems — *PME* – automotive equipment supplier

Sep 2011 – Feb 2012 Le Bourget (93), FRANCE

- Design and static analysis of headlamp cleaning systems using **Catia**
- Analysis of experimental data using **Matlab**

MOST PROUD OF

7 reviewed research articles
and more than 130 citations since

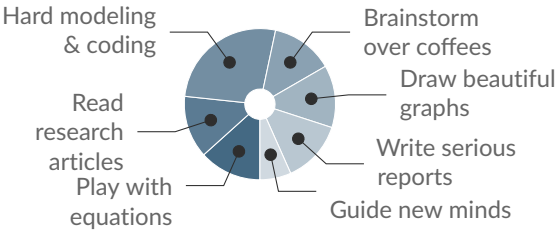
2 submitted patents at the INPI
with the kind support of our team

5 involved open-source projects
with software engineering practices

STRENGTHS

Thermomechanics | Material modeling | Applied maths | Numerical analysis | Statistical data analysis | Programming | CAE tools | Scientific communication | Development of advanced simulation tools

TYPICAL DAY AT WORK



LANGUAGES

Chinese ●●●●●

French / English ●●●●○

EDUCATION

PhD in Solid Mechanics

Univ. Paris-Saclay (Ecole Polytechnique)

2013 – 2016 Palaiseau (91), FRANCE

- Supervisors: Jean-Jacques Marigo (l'X), Daniel Guilbaud (CEA) and Serguei Potapov (EDF)

Engineer in Mechanics

Univ. de Technologie de Compiègne

2010 – 2013 Compiègne (60), FRANCE

Bachelor in Mechanics

Univ. de Technologie Sino-Européenne

2007 – 2010 Shanghai, CHINA