TIANYI LI

Research engineer in multiphysics and multiscale simulation methods

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EXPERIENCES

Simulation Technology Specialist

Dassault Systèmes, Corporate Research

Jan 2020 – now | Vélizy-Villacoublay, France

- **Physics-Informed Neural Networks** (PINN): literature study regarding
- Real time **GPU-based voxel solver** for simulation-driven design: fictitious domain method, matrix-free approach, geometric multigrid for linear elasticity and (transient) heat transfer, iterative linear solvers, improvement in accuracy, robustness and performance
- **Partitioned multiphysics coupling** methods: fixed-point acceleration, results mapping, subcycling and temporal interpolation, dynamic mode decomposition (DMD) surrogates, fluid-structure interaction simulations using **OpenFOAM** and **CalculiX**
- Collaborations with **CATIA** and **SIMULIA** brands

Research and Development Engineer

Promold

Apr 2017 – Dec 2019 | Paris, France

- Injection molding (process) and integrative multiscale (structural) simulations of fiber-reinforced polymers with **Moldflow**, **Moldex3D**, **Optistruct**, **Radioss**, **code_aster** and **Digimat**
- **Rheological modeling** of fiber-reinforced composites: anisotropic fiber-dependent viscosity and fiber orientation evolution. Code development using **C++**
- Development of various numerical tools (**Python**) for multiphysics simulation
  - Results **mapping**, **mean-field homogenizaton** methods of fiber composites and **uncertainty propagation** using data-driven surrogates
  - Adaptive optimization methodology of fiber orientation model parameters using **Kriging** and **Expected Improvement**
  - Buckling analysis of fiber-reinforced materials with finite element library **FEniCS** and eigenvalue solver **SLEPc**
  - Process automation under **HyperWorks** using **TCL**; **Docker** deployment; post-processing of simulation results under **ParaView**; data analysis and visualization under **Jupyter**

PhD Candidate in Solid Mechanics

IMSIA (CNRS-EDF-ENSTA research lab)

Oct 2013 – Sep 2016 | Palaiseau, France

- **Phase-field fracture** modeling of brittle materials: variational formulation and numerical simulations (**PhD thesis**)
- Code development in an industrial explicit dynamics finite software **Europlexus** using **PETSc** (**Fortran**): quasi-perfect scaling efficiency obtained
- Contributions to the open-source finite element library **FEniCS** (**C++**)

MOST PROUD OF

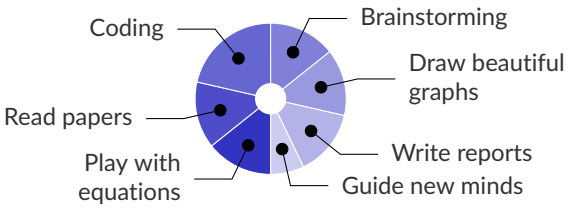
Recent integration of the Deep Material Network model into Abaqus
thanks to continuous efforts and collaboration with SIMULIA colleagues

My speech in front of 900 people
and engagement in Eloquence de la Différence

STRENGTHS

Nonlinear mechanics | Computational mechanics | Scientific machine learning | Programming | CAE tools | Scientific communication | Listening and empathy

TYPICAL DAY AT WORK



LANGUAGES

Chinese ●●●●●

French / English ●●●●○

EDUCATION

PhD in Solid Mechanics

Univ. Paris-Saclay (Ecole Polytechnique)

2013 – 2016 | Palaiseau, France

Engineer in Mechanics

Université de Technologie de Compiègne

2010 – 2013 | Compiègne, France

Bachelor in Mechanics

Université de Technologie Sino-Européenne de Shanghai

2007 – 2010 | Shanghai, China