BSc. NGUYEN XUAN BINH

Phone Number: *+358 457 833 5403* ***Linkedin****: https://www.linkedin.com/in/xuanbinh/*

Email: *xuanbinh.dev@gmail.com* ***Github:*** *https://github.com/SpringNuance*

Address: *Puumiehenkuja 3(R208a), 02150 Espoo, Finland*

Summary

A dedicated individual with a strong background in computational engineering, data science and computer science. Demonstrates a blend of academic excellence and interdisciplinary working experience in different engineering domains.

Research interests

- Study crystal plasticity models such as dislocation-density based model.
- Specialized in optimization algorithms for material model calibraton
- Generative models for producing synthetic material data
- Finite element analysis with Abaqus/Siemens NX softwares
- Building CAD models and analyze failure mechanisms

Education

- **Bachelor of Science: Computational Engineering** – 2020 - 2023
  Aalto University, Espoo, Finland Cumulative GPA: 4.86
- **Master of Science: Machine Learning, Data Science and Artificial Intelligence**
  2023 – Ongoing Aalto University, Espoo, Finland
- **Languages:** English (proficient), Finnish (basic), Vietnamese
- **Award:** Aalto School of Engineering Dean's List 2021-2022 and 2022-2023

Technical Skills

- **Computational Engineering skills:** Working with micro- and macromechanics.
  Softwares and frameworks: MATLAB (MTEX), DAMASK (Crystal plasticity), Abaqus (FEA), Dream3D (RVE), Siemens NX (Mechanism building), CreoPTC (CAD models).
- **Data science**: Machine learning, Artificial Intelligence, Deep Learning, Data Mining, Probabilistic Methods, Reinforcement Learning, Constraint Programming
  Languages and frameworks: Python, Pytorch, Tensorflow, R, Stan, Julia
- **Programming skills**: Computer Networks, High-Performance Computing, Parallel Computing, Relational Databases, Concurrent Programming, Cloud Services (AWS)
  Languages and frameworks: CSC HPC services, Scala, C++, OpenMP

Research Experiences

- **1 - 4/2023**: Teaching assistant in Artificial Intelligence course
- **3/2023 – Now**: Research assistant at Aalto Mechanical Engineering Department
  Conducting material testing, developing computational engineering simulations
- **6 - 9/2023**: Advisor of Aalto Science Institute (AScI) international summer research program (2 students, 2 projects. Project I: Micromechanics model optimization, Project II: Microstructure representative volume elements optimization.)
- **9 – 12/2023**: Computational Engineering Project advisor Responsible for advising a graduation project topic for 3 Bachelor-level students.

Projects

- **Crystal Plastictiy**: Nondominated Sorting Genetic Algorithm of constitutive parameters to fit flow curves, which uses CSC service for running simulations.
- **Abaqus macromechanics**: Bayesian Optimization of hardening law to fit force displacement curves, which uses CSC service for running simulations.
- **RVE micromechanics:** Wasserstein Generative Adversial Networks (WGAN) to generate grains in representative volume element.
- **Parallel computing**: parallelized sorting algorithms, vectorization, GPU utilization
- **Chat application**: software supporting IPv4 and IPv6 network with integrated GUI

Publication

- Rongfei Juan, **Nguyen Xuan Binh**., Lian Junhe, An Efficient Automatic Method for Determining Constitutive Parameters in Crystal Plasticity Models Using Artificial Neural Networks and Nondominated Sorting Genetic Algorithms. Will be submitted by Winter.