BSc. NGUYEN XUAN BINH

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**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**](https://github.com/SpringNuance/Abaqus-Macromechanics-Project): 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**](https://github.com/SpringNuance/Programming-Parallel-Computers): parallelized sorting algorithms, vectorization, GPU utilization
* [**Chat application**](https://github.com/SpringNuance/chat_application_GUI-version): 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.