Gabriel Nsengiyumva, Ph.D.

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SUMMARY

Expertise: FEM, Solid Mechanics, Material Strength, Computational Mechanics, Mechanical Testing, Statistics.
Skills: FEA, CAE, Abaqus, ANSA, META, nCode, LS-Dyna, Python and MATLAB Scripting.
Languages: English, French, Korean, Kinyarwanda, Swahili.
Hobbies: Hiking, Soccer, Cycling, Camping, Photography, Traveling, Scuba Diving.

PROFESSIONAL EXPERIENCE

Analysis Engineer
Tesla Inc., Fremont, CA March 2022 – Present

New Vehicle Program:

- Run non-linear static and dynamic Finite Element Analysis using Abaqus and LS-Dyna on BIW and Full-vehicle.
- Provided fast-paced feedback on design direction to improve BIW strength, fatigue, and dynamic strength performance.
- Interacted with multi-functional teams, management to develop load inputs and performance requirements.
- Communicated and reported analysis results to multi-functional teams and recommended design changes/directions to meet product performance requirements.
- Drove analysis of the rear-under-body high pressure die casting for strength, fatigue, towing, and vehicle recovery.
- Coordinated and worked with other analysts to integrate subsystems/modules models into larger system assemblies.
- Participated in team brainstorming and propose solutions to problems based on analysis data.
- Developed new technology in form of python scripts and toolbar for META post-processor.

Tesla CyberTruck:

- Oversaw calibration, verification, and validation of Cybertruck front chassis models through physical testing.
- Owned analysis of front-end module and hood subsystems containing both polymers and adhesives materials.
- Analyzed the root cause and failure in Cybertruck front chassis during high-cycle fatigue.
- Performed structural and thermo-structural/mechanical analysis of high-voltage battery components.
- Partnered closely with the structural test team to correlate and validate FEA results.

Postdoctoral Researcher
Texas A&M University, College Station, TX January 2021 – March 2022

- Performed testing using Digital Image Correlation(DIC), UTM and Dynamic Mechanical Analysis machines.
- Drove analysis (using Abaqus) and test (using UTM, DIC, and DMA) of elastic and polymer materials.
- Developed an inverse material characterization method in python and MATLAB based on FEA-DIC results.
- Employed extrinsic cohesive zone elements to model fracture initiation and evolution in heterogeneous materials.
- Identified constitutive and fracture properties of elastic and viscoelastic materials using the FEA-DIC inverse method.
- Produced 3D CAD and 2d drafts of mechanical test fixtures/jigs for UTM and DMA machines.

LEADERSHIP AND TEACHING EXPERIENCE

Laboratory Manager
Texas A&M Engineering Experiment Station January 2020 – December 2020

- Oversaw and managed laboratory activities, maintenance, and purchase of equipment (~$1M).
- Provided training on experiment test equipment, FEA, DIC, UTM Machines, and DIC-FEM inverse method.

Graduate Teaching Assistant and Mentor
University of Nebraska-Lincoln January 2014 – December 2018

- Mentored 6 undergraduate students on mechanical experimental test, data analysis, and academic publication.
- Participated in middle and high school outreach events encouraging STEM in the youth.
- Assisted in teaching and grading materials-oriented junior-level class of ~60 students for 4 semesters.

President of Recognized Student Organization
University of Nebraska-Lincoln December 2016-December 2017

- Founded the Rwandan Student Association, formed the executive board, and lead recruitment ~150 active members.
- Organized 5 events (3 on-campus and 2 off-campus) attended by ~1000 people.

EDUCATION

Doctor of Philosophy, Civil Engineering, **Texas A&M University**, College Station, TX., GPA: 4.0/4.0
Master of Science, Civil Engineering**, University of Nebraska-Lincoln**, Lincoln, NE., GPA 3.81/4.00
Bachelor of Engineering, Civil Engineering**, Kyung Hee University**, Yongin-si, South Korea, GPA 3.5/4.00