Elena Akterskaia, PhD

Green Card Holder

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Profile

- Enthusiastic software engineer with academic and industrial experience (5+ years) in algorithms development and optimization, with focus on efficiency and automation. PhD research experience (finished in 3 years), developed a complex numerical simulation approach that allowed modeling failure progression in aircraft fuselage.
- **Programming**: Python (adv.), Matlab (adv.), SQL(int.), C (int.)
- **Numerical**: probability theory, simulations, numpy, pandas, scipy, scikit-learn, matplotlib, pytorch
- **ML algorithms**: deep learning, computer vision, linear / logistic regression, random forest, gradient boosted trees, SVM, kNN, PCA, k-means

Education

2019 **Ph.D., Mechanical Engineering**, Leibniz University Hannover, Germany, **GPA 1.0/1.0**
Courses on Advanced Algorithms and Data structures, Machine Learning, Databases and SQL for Data Science,
2019 Programming on Python, System Design, Statistics for Data Science, Programming for competitions
2019 **Project Management,** Leibniz University Hannover, Germany, Certificate
2012 **M.S., Computational Mechanics**, Peter the Great St. Petersburg Polytechnic University, Russia, **GPA 5.0/5.0**
2010 **B.C., Computational Mechanics**, Peter the Great St. Petersburg Polytechnic University, Russia, **GPA 4.95/5.0**

WORK EXPERIENCE

2016-2019 **Associate Researcher,** Leibniz University Hannover, Germany

- Developed a novel multiscale method for modeling and prediction of failure progression in the fuselage aircraft, performed material degradation modeling and established a framework for recalculation of homogenized properties to ensure seamless transfer of information from the refined local level to larger global level which allowed to reduce computational time up to 50%
- Developed automatic pipeline for model creations for the finite element software (full geometry described by nodes and elements locations and properties) and post-processing output data for the part of fuselage model, increasing prediction accuracy to 1-3%

2018 **Marie Skłodowska-Curie Fellow,** Porto University, Portugal

- Designed and implemented scripts for automatization of models' creation and transfer data between models

2017 **Marie Skłodowska-Curie Fellow,** University of Bristol, UK

- Formulated discrete cohesive zone model for shell panel structures that allows physical modeling of adhesive layer between panels and leads to decrease in computational time by 75%

2008-2015 **Head of optional educational courses**

- Prospecting for new customers and PR. Teacher of advanced math, physics

2008-2012 **Research scientist SWE,** CompMech Lab Ltd., Russia

- Developed a set of programs for automatic parametric model generations to obtain and evaluate homogenized properties of composite materials. Post-processed and analyzed results from simulations of stochastic models to investigate influence of random inclusions and their sizes on material level. Hyperparameter search for an optimal model for the injection molding simulation of a bumper.

Publications

- **Akterskaia M**, Camanho P, Jansen E, Arteiro A, Rolfes R. Progressive delamination analysis through two-way global-local coupling approach preserving energy dissipation for single-mode and mixed-mode loading, CS 223, 2019
- **Akterskaia M**, Jansen E, Hallett S, Weaver P, Rolfes R. Progressive Failure Analysis of Stiffened Composite Panels Using a Two-Way Loose Coupling Approach Including Intralaminar Failure and Debonding, AIAA Journal 57, n. 7, 2019
- **Akterskaia M**, Jansen E, Hallett S, Weaver P, Rolfes R. Analysis of skin-stringer debonding in composite panels through a two-way global-local method, Composite Structures 202, 1280–1294, 2018
- **Akterskaia M**, Jansen E, Hühne S, Rolfes R. Efficient progressive failure analysis of multi-stringer stiffened composite panels through a two-way loose coupling global-local approach, Composite Structures.183, 137–145, 2018
- **Book chapter: Akterskaia M**, Jansen E, Hallett S, Weaver P, Rolfes R. Post-buckling progressive failure analysis of composite panels using a two-way global-local coupling approach including intralaminar failure and debonding. In Advances in Predictive Models and Methodologies for Numerically Efficient Linear and Nonlinear Analysis of Composites. Springer International Publishing, 2019, pp. 83–102