

MENG XU

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SUMMARY

- Excellent background in the theory and implementation of optimization algorithms (linear, nonlinear, multi-objective, deterministic, and heuristic)
- Hands-on experience with numerical computation and algorithm development for large-scale optimization problems
- Proficient with Matlab, Python, C programming

EXPERIENCE

Research Assistant, *Clemson University, Clemson, SC*

08/2011 - Present

- Implemented various deterministic and heuristic optimization methods (line search, steepest descent, simplex method, and genetic algorithm, etc.) in Matlab and Python.
- Analyzed and optimized a collection of design problems (speed reducer design, electronic packaging and portal frame structural design problem, micro-accelerometer design problem, etc.) through multi-disciplinary design optimization algorithms for large-scale problems.
- Developed a parallel and distributed optimization algorithm using the Lagrangian duality theorem in Matlab, which shows clear advantages over existing algorithms in terms of efficiency and accuracy when solving large-scale problems.
- Developed numerical algorithms in C and Python for ray tracing and word processing.
- Investigated and compared different distributed optimization algorithms (hierarchical or nonhierarchical, parallel or sequential).
- Analyzed the sensitivity and uncertainty of optimization with respect to certain parameters through approximation techniques.
- Wrote a genetic algorithm (NSGAI) in Matlab to solve multi-objective optimization problems, obtained the approximated Pareto Front and analyzed the results with different population sizes and generation numbers.
- Solved the travelling salesman problem with 100 nodes using genetic algorithm and nearest neighbor algorithm.
- Implemented several machine learning algorithms in Matlab, including supervised learning and unsupervised learning methods.

Process Development Engineering Intern, *Draexlmaier Automotive of America LLC, Duncan, SC*

07/2012 – 08/2011

- Tested the airbag deployment force of instrument panels, collected the force values of the panels after different lamination times.
- Analyzed the experiment data, drew conclusions that can reduce the waiting time of the panels for airbag deployment test.

EDUCATION

Ph.D. in Mechanical Engineering, *Clemson University, Clemson, SC, USA*

GPA: 3.9/4.0

08/2011 – 08/2015

- Multidisciplinary Design Optimization (MDO) of Complex Systems

M.S. in Mechatronic Engineering, *Harbin Institute of Technology, Harbin, China*

GPA: 3.9/4.0

08/2009 – 07/2011

B.S. in Mechanical Engineering, *Harbin Institute of Technology, Harbin, China*

GPA: 3.7/4.0

08/2005 – 07/2009

HONORS & AWARDS

2013 ASME/Computers and Information Engineering (CIE) conference poster award and travel award

2014 ASME/Design Automation Conference (DAC) best paper