Jesper Toft Kristensen

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US Permanent Resident

PROFESSIONAL SUMMARY

Proven team leader focused on bringing interdisciplinary teams together in order to achieve highly complex goals within short timelines. Accomplished technical and application expert driven to utilize my engineering skill set to identify and optimize application specific opportunities that range from creating predictive damage models of turbines to engine geometry optimization to generating low-risk high-returns investment strategies. A theme of accomplishments to date has been leveraging and advancing sophisticated Probabilistics and Optimization techniques from my deep engineering background in order to produce superior insights from complex data sets. Some of my key responsibilities include leading a strong technical team of six PhD engineers to produce new methods, solve challenging applications, and to teach these methods and approaches to our customers and business unit clients.

Expertise:

- Probabilistics (Uncertainty Quantification (UQ), Uncertainty Propagation, Sensitivity Analysis, Probability of Failure, …)
- Surrogate Modeling (Gaussian Process Regression, Multi-fidelity, Neural Networks, LASSO, …)
- Advanced Optimization Techniques (Markov Chain Monte Carlo and Sequential Monte Carlo, Bayesian Global Optimization (BGO) and highly-constrained high-dimensional BGO, Genetic Algorithms, Stochastic Gradient Descent, …)
- Bayesian Technology (Priors, Posteriors, Predictive distribution, ties into UQ, …)
- Machine Learning (Neural Networks for Classification, exposure to Deep Neural Networks)
- Complex Dataset management (Custom pre-processing Python tools, transformations, dimensionality-reduction techniques, data imputation, unstructured data processing, …)
- Agile development (scrum: daily stand-ups, sprints, …)

PROFESSIONAL EXPERIENCE

GENERAL ELECTRIC – GLOBAL RESEARCH CENTER (GRC), Niskayuna, NY

Lead Engineer (R&D), Mar 2018 – present

- Leading $1 million project with 6 engineers; responsible for budget; report to senior and executive level
- Responsible for developing new probabilistics and optimization techniques
- Helped save 90% computational effort on Power plant optimization (~$600k/year) using BGO + ANN
- Selected as core developer on GE Crown Jewels
- Developed approach to increase GE production aircraft engine aerodynamics efficiency by 35%
- Helped save $10k/hr. reducing steam turbine testing runs
- Developed method to convert Gaussian Process to Polynomial – enabled deployment to some BHGE sites
- Developed approach to optimize wind blades for GE Renewables
- Responsible for porting core probabilistic tools to new Python software initiative within GE
- Developing predictive analytics on Predix for damage modeling of steam turbines
- Teaching advanced methods to GE's engineers via training sessions solely responsible for producing slides, tutorial videos, manuals, documents, maintaining/debugging the team's production-level tools, maintaining website

GENERAL ELECTRIC – GLOBAL RESEARCH CENTER, Niskayuna, NY

Research Engineer (R&D), Sep 2015 – Mar 2018

- Develop and employ state-of-the-art probabilistics and optimization methods
  - Bayesian, Gaussian Process, Neural Networks, Regression, Classification

- Helped increase steam turbine valve performance by 10% via predictive models and optimization
- Advance Bayesian Global Optimization methods and Gaussian Process capabilities
- Helped speed up FFT code by 75%

CORNELL UNIVERSITY, Ithaca, NY
Research Assistant, May 2015 – Sep 2015
- Research state-of-the-art machine learning methods for materials characterization
- Work on various supercomputers across the US (Conte & Rice, Olympus, Hopper, HiPerGator)

EDUCATION

CORNELL UNIVERSITY, Ithaca, NY
Doctor of Philosophy, Applied and Engineering Physics, May 2015
Advisor: Prof. Nicholas J. Zabaras
- GPA: 3.98/4.0
- Minor: Materials Science, Computer Science
- TA in Applied and Engineering Physics course "Lasers and Photonics"
- TA in Mechanical and Aerospace Engineering Department
- Tutor in Physics Department

CORNELL UNIVERSITY, Ithaca, NY
Master of Science, Applied and Engineering Physics, May 2014
- GPA: 3.98/4.0
- Tutor in Office of Academic Diversity Initiatives

CORNELL UNIVERSITY, Ithaca, NY
Master of Engineering, Engineering Physics, Aug 2011
- GPA: 4.0/4.0
- Distinction: Henri S. Sack Memorial Award for Top Academic Performance
- MEC Fellow

TECHNICAL UNIVERSITY OF DENMARK, Lyngby, Denmark
Bachelor of Science, Physics and Nanotechnology, May 2010
- GPA: 11.57/12.00
- Member of Physics and Nanotechnology Council

PUBLICATIONS

- 1 patent (2018)
- 1 book chapter (2017)
- 15 GE technical reports (2015-)
- 17 conference papers and talks (2011-)
- 6 peer reviewed journal publications (2009-)

VOLUNTEERING

- Membership Chair – Newcomers Club (2016-2018)
- GE Asian Pacific American Forum – Walk for Education (2018)
- Reviewer – International Journal for Numerical Methods in Engineering (2017-)
- Reviewer – Structural and Multidisciplinary Optimization (2016-)
- Reviewer – Internal Journal of Uncertainty Quantification (2011-)

CERTIFICATES

- Deep Learning (deeplearning.ai & Coursera, 2018)
- Six Sigma DMAIC & DFSS (GE, 2016)
- Project Management (GE, 2016)

AWARDS & ACKNOWLEDGEMENT

- Talent Development Workshop (GE, 2018)
- 2 × Impact Awards (GE, 2018)
- Teaching Award (GE, 2018)
- 3 × Above and Beyond (GE, 2016)
- 6 × Scholarships
- Full member of Sigma Xi scientific research society

LANGUAGES

- English (Fluent)
- Danish (Native)

SOFTWARE

- Python (5+ years; expert)
- MatLab
- Git
- Linux & scripting

STAYS ABROAD

- University of Warwick, UK (2015)
- University of Florida (2014)
- University of California at Santa Barbara (2010)
- Rensselaer Polytechnic Institute (2009)