



A general-purpose Python toolkit for Uncertainty Quantification

- Includes some of the latest techniques in uncertainty quantification for sampling, inference, reliability, surrogate modeling and more
- Seamlessly connects to third party numerical solvers such as Abaqus, LS-DYNA, or custom codes for serial or massively parallel computations.
- Harnesses the Python scripting language
- Easy user installation through the Python Package index (pip). Developer installation available through Github.
- Rapidly expanding capabilities

<https://github.com/SURGroup/UQpy>

Version 2.0 now available. Capabilities include...

Sampling Methods

Monte Carlo Simulation
Latin hypercube sampling
MCMC
Stratified Sampling
Importance Sampling

Reliability

FORM / SORM
Subset Simulation
Importance Sampling

Surrogate Modeling

Stochastic Reduced Order
Models
Kriging / Gaussian Process
Regression

Inference

Bayesian Model Selection
Information-theoretic Model
Selection
Bayesian Parameter Estimation
Multimodel inference

Stochastic Process Simulation

Karhunen-Loeve Expansion
Spectral Representation Method
Translation Processes
Bispectral Representation
Method

RunModel Module

Automate uncertainty analyses
with third party solvers

Future Capabilities to include...

Optimization – Efficient Global Optimization
Global Sensitivity Analysis – Sobol Indices
Stochastic collocation – Sparse grids, adaptive multi-element collocation
Dimension Reduction – Manifold projections (Diffusion and Grassmann manifolds)
Surrogate modeling – Polynomial chaos expansions

Online web training – May 16 -17, 2019
For more information, contact UQpy.info@gmail.com