

Statistical bootstrapping

John M. Maloney, Research Scientist, Van Vliet Group / Laboratory for Material Chemomechanics, MIT, Cambridge MA USA

Friday 30 January, 2015
10.30am-12pm
SMART Enterprise Wing Level 5,
Perseverance Rooms 1 & 2

How can we take maximum advantage of hard-to-acquire data to represent uncertainty honestly to others and ourselves? In the first part of this workshop, we review statistical definitions, distribution types, model fitting, and types of error bars. Bootstrapping, or resampling with replacement, is described; this nonparametric computational technique enables hypothesis testing and can quantify uncertainty---all without any assumptions of distribution shape. Bootstrapping code for Mathematica and MatLab is provided. In the second part, several bootstrapping applications in cell biology are presented as a jumping-off point for a group discussion of bootstrapping uses and opportunities at SMART.



John M. Maloney, Research Scientist, Van Vliet Group/ Laboratory for Material Chemomechanics, MIT, Cambridge MA USA