**In this paper:**

1. A new framework for nonlinear system identification is presented in terms of optimal fitting of stable nonlinear state space equations to input/output/state data, with a performance objective defined as a measure of robustness of the simulation error with respect to equation errors.
2. They formulate a convex optimization problem to minimize an upper bound on the true simulation error while guaranteeing the stability and well-posedness of the identified model.
3. They introduce several versions of RIE (Local and global), motivated by the idea of storage functions and dissipation inequalities to generate useful upper bounds of and .

**Suggestions:**

1. Using Kalman Filter to estimate the measure states of the system, which was not considered in this article.

**Definitions:**

**Static System Identification:** models y = h(u) defined by “simple” functions h(.) are fitted to data records of u and y, is a major topic of research in statistics and machine learning.

**Convex function:** In [mathematics](https://en.wikipedia.org/wiki/Mathematics), a [real-valued function](https://en.wikipedia.org/wiki/Real-valued_function) is called **convex** if the [line segment](https://en.wikipedia.org/wiki/Line_segment) between any two points on the [graph of the function](https://en.wikipedia.org/wiki/Graph_of_a_function) does not lie below the graph between the two points

**Well-posedness:**

1. a solution exists
2. The solution is unique
3. The solution's behaviour changes continuously with the [initial conditions](https://en.wikipedia.org/wiki/Initial_condition).

**Bijection:** A mapping that is both one-to-one (an injection) and onto (a surjection), i.e. a function which relates each member of a set *S* (the domain) to a separate and distinct member of another set *T* (the range), where each member in *T* also has a corresponding member in *S*.

**Ellipsoid method:**

In mathematical optimization, the ellipsoid method is an iterative method for minimizing convex functions. When specialized to solving feasible linear optimization problems with rational data, the ellipsoid method is an **algorithm which finds an optimal solution in a number of steps that is polynomial in the input size**.