

A test of significance in functional quadratic regression

Lajos Horvath, Ron Reeder

(Submitted on 29 Apr 2011)

We consider a quadratic functional regression model in which a scalar response depends on a functional predictor; the common functional linear model is a special case. We wish to test the significance of the nonlinear term in the model. We develop a testing method which is based on projecting the observations onto a suitably chosen finite dimensional space using functional principal component analysis. The asymptotic behavior of our testing procedure is established. A simulation study shows that the testing procedure has good size and power with finite sample sizes. We then apply our test to a data set provided by Tecator, which consists of near-infrared absorbance spectra and fat content of meat.

Subjects: **Statistics Theory (math.ST)**
MSC classes: 62J05
Cite as: **arXiv:1105.0014 [math.ST]**
(or **arXiv:1105.0014v1 [math.ST]** for this version)

Submission history

From: Ron Reeder [[view email](#)]
[v1] Fri, 29 Apr 2011 20:11:26 GMT (109kb,D)

[Which authors of this paper are endorsers?](#)

Download:

- [PDF](#)
- [Other formats](#)

Current browse context:

math.ST

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1105](#)

Change to browse by:

[math](#)
[stat](#)

References & Citations

- [NASA ADS](#)

Bookmark (what is this?)



Science
WISE