Using Computational Intelligence for Mining Agriculture Data

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Outline

Motivation

Part I: Data Mining& Modeling

Part II: Data Analysis

Motivation: Precision Farming

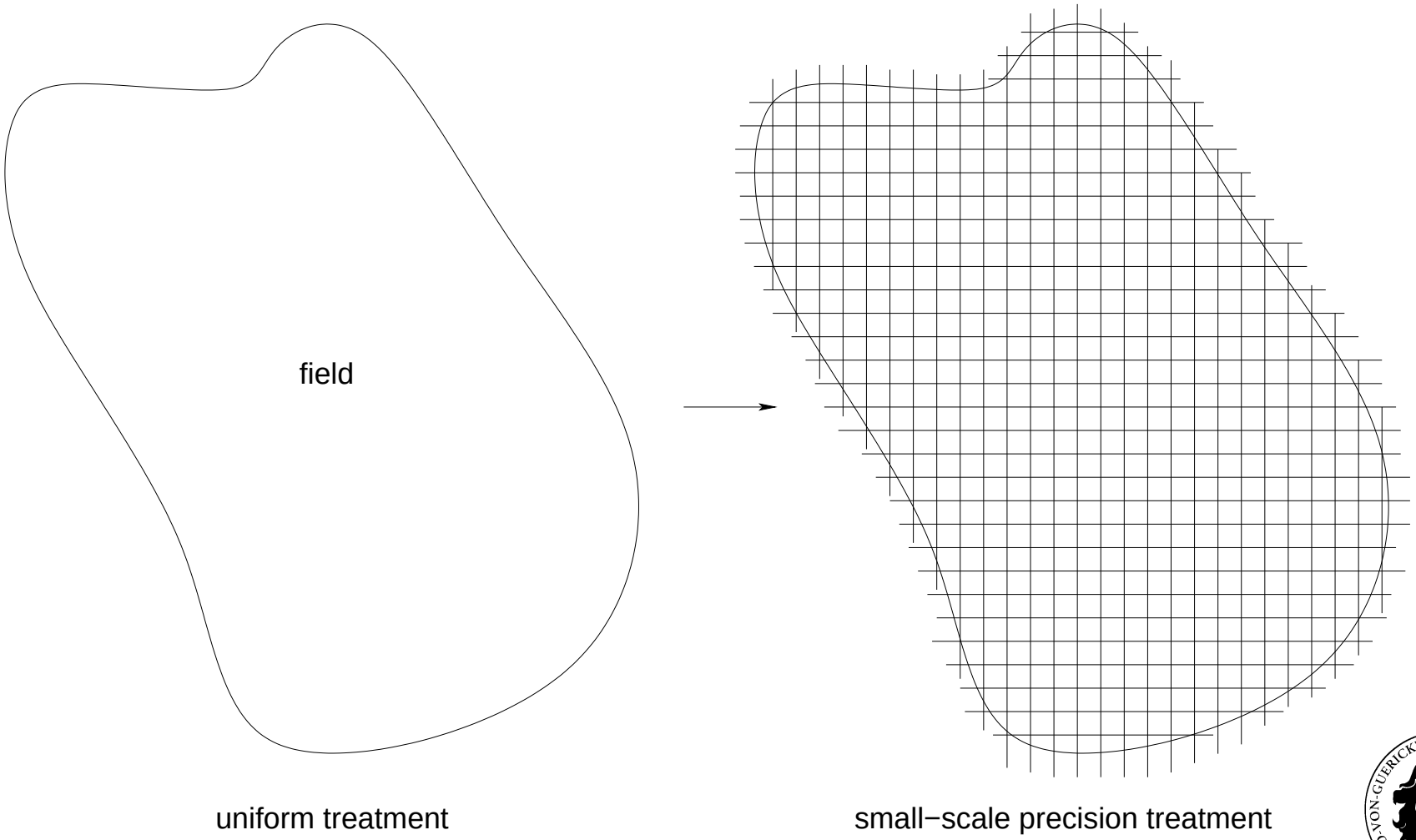

Figure: Precision Farming: from uniform field to small-scale area

Motivation: Precision Farming

- precision farming
  - divide field into small-scale parts
  - treat small parts independently instead of uniformly
  - cheap data collection
  - GPS-based technology
- lots of data (sensors, imagery, GPS-tagged)
- use data mining to
  - improve efficiency
  - improve yield

Data Flow Model

Figure: Data Mining Context

Part I: Data Mining & Modeling

- input: numeric variables from the field(s)
- target: yield variable
- regression task
- evaluate models
  - neural network (MLP) as reference from earlier work
  - neural network (RBF)
  - regression tree
  - SVM regression
- try to understand models: self-organizing map (experimental!)

Part II: Data Analysis

- new sensors and ideas for measuring a field's heterogeneity are being developed
- evaluate the data from those sensors with respect to its capability to yield prediction
- visualize sensor data and their predictive capability accordingly

Questions?

Q & A.