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Statistics and Actuarial Science
Statistiek en Aktuariële Wetenskap

S E M I N A R

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(North-West University)

Selection of initial points using space-filling designs for Active Learning

ABSTRACT

Classification requires labelling large sets of data, which is often a time-consuming and expensive process. Active learning is a machine learning technique that has gained popularity in recent years due to its ability to effectively reduce the amount of labelled data required to train accurate models. The success of the active learner heavily relies on the selection of the initial points to initialise the active learning process. In this paper, we compare the performance of the traditional random sampling approach to the maximin Latin Hypercube sampling, conditioned Latin Hypercube sampling, and a modified Latin Hypercube sampling procedure for initialising active learning for the estimation of the logistic regression in binary classification problems. We show that the Latin Hypercube sampling designs outperform random sampling for all the performance measures evaluated. Furthermore, principal component analysis and biplot visualizations indicate that approximately 10% of the data is required to develop an accurate and precise logistic regression classifier. The results are demonstrated using simulated data sets and an actual case study.

Date:
Friday, 10 April 2026

Time:
13h10-14h10 SAST

***Venues*:**
- Room 2048
  Van der Sterr Building,
  cnr Victoria & Bosman Streets
  Stellenbosch
- Online

WHO SHOULD ATTEND?
All are welcome.

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Prof Coetzer is the Director of the Focus Area for Pure and Applied Analytics in the Faculty of Natural and Agricultural Sciences at North-West University, Potchefstroom.

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