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C O L L O Q U I U M

Applying biplotEZ: Explore Your Data with Multivariate Scatterplots

Prof Sugnet Lubbe (Stellenbosch University)

DATE: Monday, 30 June 2025 | 16h00–17h00 SAST

VENUES:
- Neelsie Cinema, Stellenbosch University
- Room P215, 2nd Floor, Physics Building, University of the Witwatersrand
- Online

--- A recording of the talk will be published on the NITheCS YouTube channel afterwards ---

ABSTRACT

In the diverse field of Data Science biplots are useful tools for exploratory data analysis, visualising multivariate data in two or maybe three dimensions. In this presentation I will start with a brief introduction of the linear algebra underpinning the biplot as a tool to represented both the rows and columns of a data matrix. The focus will be on representing observations as sample points while variables are represented as axes, analogous to ordinary scatterplots. The R package biplotEZ on CRAN provides for constructing a variety of different biplots associated with different types of analyses. We will use biplotEZ on an assortment of applications for a whirl wind tour of different applications of biplots – everything from engineering and health sciences to antique furniture. Although the most popular biplots – Principal Component Analysis biplots and Canonical Variate Analysis biplots – were designed for quantitative data, we will look at a wider variety of biplots which also cater for qualitative variables. Challenges and possible solutions that result from the visualisation of big data will also be discussed.
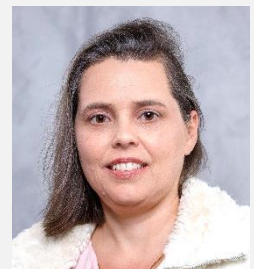
BIOGRAPHY

After 13 years in the corporate sector, Sugnet Lubbe transitioned to academia in 2009 as Associate Professor at the University of Cape Town. In 2017, she joined Stellenbosch University as Professor of Statistics. Her research focuses on multivariate data analysis, with a particular emphasis on biplots and the graphical visualisation of multi-dimensional data. Her work spans theoretical development, the creation of R software to support visualisation methods, and applied research that drives methodological innovation.

She is an elected member of the International Statistical Institute and has served on the executive committees of both the International Federation of Classification Societies and the International Association of Statistical Computing. She also chairs the Multivariate Data Analysis Special Interest Group within the South African Statistical Association.

In 2011, the Centre for Multi-dimensional Data Visualisation (MuViSU) was established at Stellenbosch University. As Director of MuViSU, she leads a growing network of 25 members, supported by one postdoctoral fellow and four postgraduate students.

In 2023, her group published the R package **biplotEZ** on CRAN, which remains in active development. Their current project, *Applying biplotEZ*, aims to expand the package's use.

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