

High-Dimensional
Non-Stationary Time Series Analysis



IRTG 1792 Short Course

Jürgen Symanzik

Stereoscopic Displays and Virtual Reality for Statistical Graphics

Three-dimensional (3-d) stereoscopic plots allow human viewers to interpret printed plots, plots shown on a computer screen, or plots projected to a wall as realistic 3-d images. Our human perception of depth, i.e., the third dimension, is due to the fact that each of our eyes sees a slightly different image. When these images are combined in the human brain, we interpret the result as a third dimension that represents depth or distance. In 3-d stereoscopic plots, two slightly different images are created and are presented to the two eyes of the viewer. When done well, a realistic 3-d image is created in our brain. Various techniques exist to create and present the two different images to the human viewer. In this presentation, we will focus on techniques that have been used extensively in the field of statistics, i.e., (i) freeviewing of side-by-side images and anaglyphs and (ii) work conducted in Virtual Reality (VR) environments at Iowa State University and George Mason University. We will start with the origins of these plots in the 19th century, look at their heydays in statistics in the mid-1980s to early 1990s, and finish with their revival in a variety of recent R packages.



Dr. Jürgen Symanzik is a Professor in the Department of Mathematics and Statistics at Utah State University in Logan, Utah. His research interests include all forms of statistical graphics and visualization, e.g., static/dynamic/interactive, on the Web, in a geographical framework, and in combination with virtual reality. In addition, he is interested in visual data mining and the incorporation of new technologies in his teaching.

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