Spatio-temporal statistics (MATH4341)
Michaelmas term

Georgios P. Karagiannis

georgios.karagiannis@durham.ac.uk
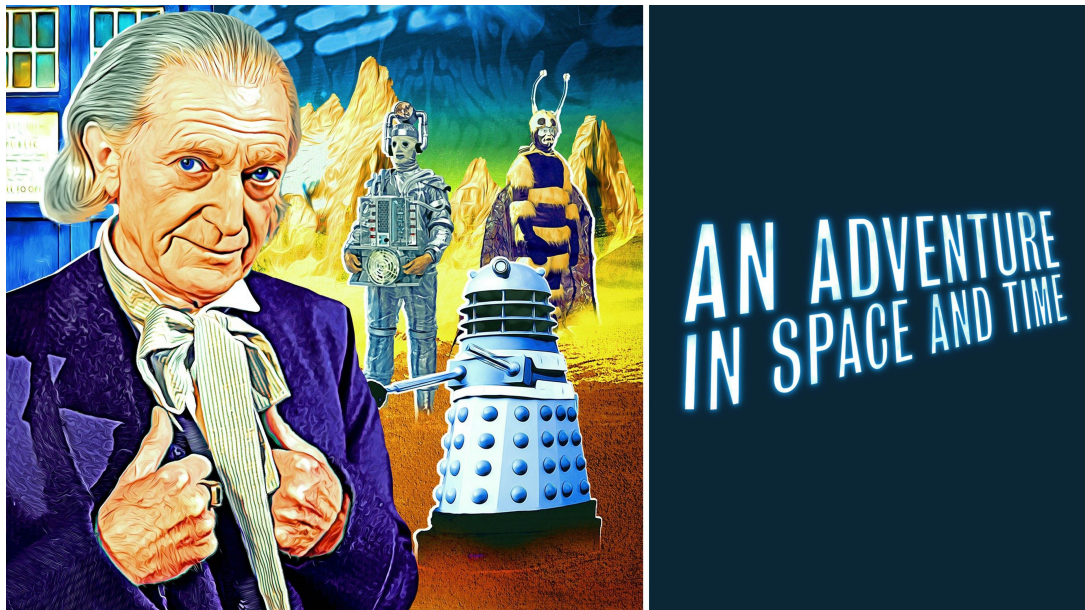
Department of Mathematical Sciences (Office MCS3088)
Durham University
Stockton Road Durham DH1 3LE UK

2023/08/14 at 15:49:16

Concepts

- Reginalised statisticalconcepts

- Geostatistics & Kriging

- Aerial unit data analysis

- Point pattern data analysis

- Computational statistics (INLA)

- Implementation in R

Reading list

These lecture Handouts have been derived based on the above reading list.

Main texts:

- Gaetan, C., & Guyon, X. (2010). Spatial statistics and modeling (Vol. 90). New York: Springer.

- van Lieshout, M. N. M. (2019). Theory of spatial statistics: a concise introduction. CRC Press.

- Wackernagel, H. (2003). Multivariate geostatistics: an introduction with applications. Springer Science & Business Media.

- Ripley, B. D. (2005). Spatial statistics. John Wiley & Sons.

- Banerjee, S., Carlin, B. P., & Gelfand, A. E. (2014). Hierarchical modeling and analysis for spatial data. CRC press.

Supplementary textbooks:

- Schabenberger, O., & Gotway, C. A. (2005). Statistical methods for spatial data analysis. CRC press.

- Wikle, C. K., Zammit-Mangion, A., & Cressie, N. (2019). Spatio-temporal statistics with R. CRC Press.

    - It demonstrate how to implement spatial, and spatio-temporal concepts in R by using descent R/CRAN packages mainly developed by the authors.

- Diggle, P. J. (2013). Statistical analysis of spatial and spatio-temporal point patterns. CRC press.

    - Major focus on [S5] –Notice that this concept may not be introduced due to the time

- Cressie, N. (2015). Statistics for spatial data. John Wiley & Sons.

    - Classic book in spatial statistics, and a bit outdated. It requires some good knowledge of spatial statistics and it required probability theory.

- Gómez-Rubio, V. (2020). Bayesian inference with INLA. CRC Press.

    - It demonstrate how to implement Integrated Nested Laplace Approximation methods.

Created on 2023/08/14 at 15:49:16 by Georgios Karagiannis