Online live course using Zoom

Generalised Additive Models for the analysis of spatial and spatial-temporal data

Provided by: Highland Statistics Ltd

Course format
- Live online teaching is from 14.00-19.00 UK time (09.00-14.00 EST).
- There are six 5-hour sessions over a 3-week period, representing a total of 30 hours of work.
- The course includes a few theory presentations along with a large number of exercises using real data sets. Detailed, annotated R code will be provided, and a brief period will be set aside for practice before each exercise is discussed in depth.
- Please note that this is not a self-study course.

Brief outline
We will start with a non-technical introduction to generalised additive models (GAM). Using a series of exercises, we show how GAMs can be used to allow for non-linear covariate effects. Once we are familiar with GAM, we will apply them to various spatial, and spatial-temporal data sets.

During the course, GAMs are applied to count data, absence-presence data, proportional data, and continuous data using the Gaussian, Poisson, negative binomial, Bernoulli, beta, gamma and Tweedie distributions.

We will apply GAMs with 2-dimensional smoothers to analyse spatial data, and spatial-temporal data. To allow for natural barriers (e.g. an island in the sea), soap-film smoothers are used.

Throughout the course we will use the `mgcv` package in R. This is a non-technical, and easy-to-follow course.

2 hours face-to-face consultancy
Provided that you attend at least 80% of the Zoom sessions, you will get two hours face-to-face video consultancy with the instructors. You can use this to discuss your own data analysis.

A discussion board (access for 12 months) allows for interaction on course content between instructors and participants.

Online live course

Dates (6 sessions):
- 31 January, 1, 7 , 8, 14 and 15 February 2024.

Price: £450.

Included: **2 hours face-to-face video chat about your data. Conditions apply.**

Instructors:
- Dr. Alain Zuur.
- Dr. Elena Ieno.

Authors of 12 books and providers of over 250 courses.

Maximum participants: 20

COURSE CONTENT

Preparation material (containing on-demand video):
- Revision exercise on multiple linear regression.
- Introduction to matrix notation.
- Revision of Poisson and negative binomial GLM.
- Introduction to DHARMa.
- What is a variogram.

Module 1 (Zoom sessions 1 and 2)
- General introduction.
- Theory presentation on GAM.
- Three introductory GAM exercises.
- Key phrases: How to fit a GAM using mgcv, how to read its output, model selection, model validation, smoother interactions, what to present in a paper.

Module 2 (Zoom sessions 2 and 3)
- Two revision exercises on Poisson and negative binomial GLM.
- One exercise on negative binomial GAM.
- Two exercises on GAMs applied to spatial data.

Module 3 (Zoom sessions 4 and 5)
- One exercise showing how to use GAM with a spatial smoother in case the study area contains a natural barrier (e.g. an island in the sea).
- One exercise on beta GAM applied to proportional data.
- One exercise on spatial-temporal data analysis using Poisson and negative binomial GAMs.

Module 4 Zoom sessions 5 and 6)
- Three exercises on GAM applied to spatial-temporal data using a variety of distributions (Bernoulli, Tweedie, Gamma).

The course material consists of relevant pdf files of presentations, data sets and clearly documented R code.

Course participants will be given access to the course website with all data sets, R solution code and course material 2 weeks before the start of the course.

PRE-REQUIRED KNOWLEDGE:
Working knowledge of R, linear regression, and Poisson, negative binomial and Bernoulli GLM. This is a non-technical course. Revision material (on-demand video) is provided.

GENERAL INFORMATION

COURSE FEE: £450
- Credit card payments are charged in GBP currency.
- VAT charge:
    - Non-EU participants (including Norway) are not subject to UK VAT.
    - UK participants are charged 20% VAT.
    - We do not have to charge VAT to EU participants who provide their institutional VAT number.
    - EU participants who do not provide a VAT number will be charged VAT at their national rate.
    - Canadian participants are subject to GST/HST tax.

COURSE TIMES:
- All sessions:
    - 14.00-19.00 UK time (09.00-14.00 EST)
    - Including a 30-minutes lunch break and two short 15 minutes tea/coffee breaks.
- You can use this link for a time zone converter: https://www.timeanddate.com/

	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
14.00-19.00 (UK time)	31 January	1 February	7 February	8 February	14 February	15 February

FREE 2-HOUR FACE-TO-FACE MEETING
Provided that you attend 80% of the Zoom sessions, the course fee includes a 2-hour face-to-face meeting with one or both instructors. You can discuss your own data, but we strongly advice that the statistical topics are within the content of the course. The 2-hours consultancy needs to be consumed in two 1-hour sessions, and will take place at a mutual convenient time. It is not transferable. The meetings needs to take place within 12 months after the last live zoom module. If attendance is between 50-80%, we will offer you 1 hour face-to-face consultancy. If attendance is less than 50%, we will not offer face-to-face consultancy.

CANCELLATION POLICY:
What if you are not able to participate? Once participants are given access to course exercises with R solution codes, pdf files of certain book chapters, pdf files of powerpoint files and video solution files, all course fees are non-refundable. However, we will offer you the option to attend a future course or you can authorise a colleague to attend this course.

GENERAL
- Please ensure that you have system administration rights to install R and R packages on your computer.
- Instructions what to install are on the course website.
- Zoom sessions will not be recorded.
- In order to receive a certificate, you need to attend at least 80% of the zoom live sessions.
- The minimum number of participants is 6. If fewer people register, we will cancel and provide a full refund.

REGISTRATION

https://www.highstat.com/

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Payment via credit card or bank transfer