3 Day Workshop on Bayesian Data Analysis
(September 16 to 18, 2019)

Organized by
Department of Statistics
Assam University, Silchar

COURSE COoRDINATOR
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About the Workshop

Data analysis is a process of inspecting, cleansing, transforming, and modeling data with the goal of discovering useful information, reaching conclusions, and supporting decision-making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, while being used in business, science and social science domains.

The Bayesian framework has greater flexibility in building statistical models and to quantify issues appearing in different disciplines of research. Such models can include information from other sources in addition to the information available in the data. With the Bayesian's philosophy of considering the parameters of probability models as random variables- the need of exploring the parameter space in a smarter way has become necessary.

Different algorithms are developed that can take care of the complex computations involved in data analysis using the Bayesian paradigm. Most such algorithms applied the extended machine learning procedures available because of computational advances. Along with the specific purpose packages that are available to perform such computation- some popular general purpose Statistical Packages are also incorporating modules specific to Bayesian computation.

The Bayesian Inference is now an incredible part of PG courses in Statistics throughout the country. However, the complexity of computations has restricted the teaching of practical data analysis with Bayesian tools to the Faculty Members, Research Scholars and PG students of Statistics. But, with the gaining popularity of Bayesian Data Analysis and modeling both in the field of Statistical Inference and Prediction the necessity of organizing such a workshop was felt.

The most popular package for researchers in Science for data analysis today is R. R is an open source programming language and software environment for statistical computing and graphics. R language also supports Bayesian Computation. Taking, advantage of the presence of Prof. Nabendu Pal of University of Louisiana, USA who is an expert in Bayesian Data Analysis this program is designed.

The workshop aims to orient Faculty members, Researchers and PG Students in Statistics in Bayesian Data Analysis from beginners to advanced level. The prime concern of this workshop is to showcase the participants the process of analysis of data in R with basic focus on Bayesian data analysis. Starting from medium level to some of the advanced statistical techniques both through R-programming and R-commands shall be on display in the workshop especially those related to Bayesian Data Analysis.

All the participants are advised to attend the workshop with their laptops with R loaded in it as there shall be several hands on training sessions.

Objectives of the Workshop

The program shall be operated through some advantages of Bayesian Data Analysis over the traditional tools of analyzing data. As the applicants are expected to have some theoretical back ground in Statistics so the main focus of the workshop shall be on some theoretical discussions on Bayesian Inference but mostly on hands on training in Bayesian Data Analysis in R.

About Assam University

Assam University came into existence through Assam (Central) University Act, 1989. It was established in 1994, since then the University is steadily becoming an excellent centre of learning. The University has sixteen Schools on major disciplines. There are 40 Departments under these Sixteen Schools and 6 interdisciplinary centers. There are two campuses of Assam University-the main campus at Silchar and the satellite campus at Diphu.

About the Department of Statistics, Assam University

The department of Statistics, under the Albert Einstein School of Physical Sciences is one of the youngest departments of Assam University, established in 2014. The mission of the department is to bring about development of the researchers in the university and beyond, by providing training in data analysis. The department is located in the second floor of Physics building in a scenic setup of the university with airy class rooms. The department has procured licensed version of SPSS 23 and SYSTAT 13. The seminar hall of the department is equipped with uninterrupted projection facility to support software training, public address system, internet connection in the computer used for projection and power plugs provided in each desk for participants to run their laptops during practical training sessions. The department also possesses a dust free air-conditioned computer lab. Alongside its normal academic programs, the department organizes workshops on statistical tools, techniques and software for the benefit of researchers.

Who Can Participate and Criteria of Selection

Registered/enrolled Ph.D students, faculty members of any recognized university/institute of India and abroad or researcher who is in need of learning Bayesian Data Analysis can apply in the training program by filling up the prescribed registration form and paying appropriate fees. However, since the hands on training shall involve R-language so the participants are expected to have working knowledge in computer based data analysis along with some basic knowledge in Statistics and probability distributions. An applicant can send a scanned copy of the filled application form to the Coordinator of the workshop by email to djb.stat@gmail.com latest by 10.09.2019 along with requisite fees. The modes of payments are mentioned below.

There are only 40 seats available for the participants. Thus, it is expected that there shall be many applicants for the training program. The applicants shall be short listed based on the requirement of the applicant as shall be evident from the registration form and on first-come-first-serve basis. Preference shall be given to candidates with background knowledge of statistics and computer applications.

The registration shall close once the required number of participants is attained. Thus, participants are advised to apply early and not to wait for the last date. The employed applicants shall get their form forwarded by competent authority.

In case an applicant is selected for the workshop he/she shall be informed by email by the Coordinator of the Training Program on or before 12th September, 2019. In case the applicant is not selected his/her fees (submitted amount) shall be returned. A candidate can withdraw from the workshop at any point of time but the registration fee shall be returned only if the withdrawal takes place on or before 10th September, 2019. No certificate shall be issued to the participant, if he/she remains absent in any of the sessions.

Registration Fee

The registration fee for the participants is as follows:

(i)   Rs. 1000/- for Faculty Members working in Universities, Colleges, Research institutes and for employed Researchers/employed Research Scholars
(ii)   Rs. 700/- for unemployed full time/part time research scholars
(iii)   Rs 300/- for PG Students

Mode of Payment

Candidate applying for the training program are required to pay the registration fee in Cash/Multicity cheque to The Office of the Head, Department of Statistics, Assam University, Silchar 788011, Assam on or before 10.09.2019 either by person or by post. The Multicity Cheque shall be drawn in favour of "HEAD DEPT OF STATISTICS".

Fees can also be paid by NEFT or RTGS to the following account details, UCO Bank, Assam University Branch, Silchar, Branch Code 002005, IFSC code: UCBA0002005, MICR Code of bank: 788028005 and A/C no. 20050110033890 Name of the A/C holder: HEAD DEPT OF STATISTICS. In case of NEFT/RTGS the applicant has to mention the transaction details in the application form.

The participants shall be provided with workshop kit, refreshments and humble vegetarian working lunch during the days of the training program.

All selected participants shall bring their laptop during the workshop days with R loaded in it.

All communication to the participants shall be made via email.

Accommodation, Travel Support and Food

No accommodation or travel support shall be provided to the participants. But on demand names of some budget hotels may be forwarded to the out station participants. The participants are requested to take up their accommodation related details from those hotels or any other hotel of their choice. Participants shall be provided humble vegetarian working lunch, tea and snacks during the workshop days.

Resource Person of the Workshop

Prof. Nabendu Pal of the Department of Mathematics, University of Louisiana at Lafayette, Lafayette, Louisiana, United States of America shall be the sole resource person of the workshop.

Venue

Seminar Hall, Department of Statistics, Assam University

Important Dates

Last date of Submission of Application Form and Fees: 10th September, 2019

Notification of Selection: On or before 12th September, 2019

Workshop Starts: 16th September, 2019
Workshop Ends: 18th September, 2019

Topics to be covered in the Workshop

- Conditional probability and Bayes' Original Formula
- From Bayes' Original Formula to Classical Bayesian Approach in Statistics
- Posterior Distribution and Various forms of Bayes' Rules (with or without a Loss Function)
- Role of the Prior Distribution
- Informative Prior and Non-informative Prior, Non-informative priors for location and Scale Parameters
- Jeffrey's Prior Distribution (both Uni-Parameter and Multi-Parameter cases)
- The Concept of Empirical Bayes Set-up
- Method of Bayesian Prediction
- Overview of Robustness in Bayesian Inference

Address of Correspondence

Dr. Dibyojyoti Bhattacharjee
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Email ID: djb.stat@gmail.com

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<u>REGISTRATION FORM</u>

<table>
<tr><td>

1. Name: _____

2. Gender: 1. Male ☐ 2. Female ☐

3. Address of Correspondence: _____

_____

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4. Email: _____ 5.Mobile no. ☐☐☐☐☐☐☐☐☐☐

5. Post Graduation in (Subject): _____

6. Are you employed?   1. Yes ☐   2. No ☐

   If yes, your designation and institution _____

7. Do you have any formal training in Statistics? 1. Yes ☐   2. No ☐

   If Yes, provide details _____

8. Amount of fees paid _____

9(i) Mode of payment_____ (ii) Transaction no. (RTGS/NEFT) _____

10. Why do you feel that the training program is useful for you? _____

_____

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_____

_____

The information provided above is true to the best of my knowledge.

Date:

(Signature of the Applicant)

Forwarding from the Employer (For employed applicants only)

I forward the application of _____ for the 3 day Workshop on Bayesian Data Analysis from 16 to 18 September, 2019 to be held at Assam University. If selected, he/she shall be allowed to join the program.

(Signature of the Head of the institution/Department, Name, address and seal)