

The international one week online workshop on *Statistics and Machine Learning in Practice* organised by Department of Statistics with Internal Quality Assurance Cell, BKC College in collaboration with Department of Statistics, West Bengal State University with active academic support from STAT&ML Lab (<https://www.ctanujit.org/statml-lab.html>) was held in the memory of Late Professor Dwijesh Dutta Mazumder during 25th to 31st July, 2020.

The programme was inaugurated by honourable Vice Chancellor Professor Basab Choudhuri and Dr. Papia Chakraborty, Principal, BKC College at 5 pm on 25th July. Fifty participants from different academic institutions of various states attended the workshop. Young researchers of ISI, Kolkata and faculty members from ISI, Kolkata, Presidency University, IIT, Jammu, Duke-NUS, Singapore mentored different sessions of the workshop. Two of the mentors are also from industries. Topics covered in the workshop include Probability & Statistics, Regression Models, Machine Learning, Dimensionality Reduction, Decision Tree, Multivariate Adaptive Regression Splines, Ensemble learning, Clustering and k-mean algorithms, Fundamentals of Neural Networks, Deep Learning, Forecasting Models, Market basket analysis. For each session we had both theoretical and practical classes with hands on examples. Practical classes are done with R and Python which the mostly used platforms for Statistics and Machine Learning these days.

All the technical supports were provided by faculty members of BKC College under the leadership of Dr. Aparajita Nag, Coordinator, IQAC and the entire IQAC team of the college.

The programme was a gala success as the participants' feedback concerned. Mentors also appreciated the initiative to enrich students during the tough time of COVID-19 and lockdown almost all over our country. Students and participants got benefited from both the theoretical and practical classes. All the video classes are also archived in BKC college youtube channel. The study materials and codes are also made available freely in the web (<https://www.ctanujit.org/courses.html>) for the benefit of all.

Zoom Meeting

Vidya Henna Palta

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- There are several such goodness of fit measure.
- These measures are useful in selection of **a single best model** among competing models.
- R-squared - $R^2 = \frac{\text{Var}(\hat{y})}{\text{Var}(y)} = \frac{\sum_{i=1}^n (\hat{y}_i - \bar{y})^2}{\sum_{i=1}^n (y_i - \bar{y})^2}$; $0 \leq R^2 \leq 1$.
- Problem of R^2** - tend to select overfitting models.
- Adjusted R-squared - $R^2_{adj} = 1 - \frac{(n-1)(1-R^2)}{(n-2)}$ - higher the better - **can be negative!**
- AIC - $-2 \ln(L(\hat{\beta}_{mle}, \hat{\sigma}^2_{\epsilon mle} | \mathbf{y}, \mathbf{X})) + 2(2 + 1)$ - lower the better.
- BIC - $-2 \ln(L(\hat{\beta}_{mle}, \hat{\sigma}^2_{\epsilon mle} | \mathbf{y}, \mathbf{X})) + \ln(n)(2 + 1)$ - lower the better.
- BIC penalizes complex models more severely - better to use BIC than AIC.

suman

20 / 29

Zoom Meeting

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01:08:36 Speaker View

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Talking:

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graph LR; train[train] -- red arrow --> Grow[Grow]; Grow -- red arrow --> tree[tree diagram]; tree -- grey arrow --> Predict[Predict]; test[test] -- light blue arrow --> Predict
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train

Grow

Predict

test

Zoom Meeting

Brahmananda K... Basab Chaudhuri Dr Sangita Gang... Aparajita Nag Sanghamitra Pal

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