BITS F464 - Machine Learning
II Semester, 2018-19
Assignment #2
Weightage: 15%
Due Date: 28th November, 2018 (WEDNESDAY)

Each group has to choose one of the following problems for Assignment #2:

1. **Kinship verification**
   Verify kinship relationship from facial images of parents and their kids. Also, try to derive sibling relationship without actually training a separate model.
2. **Ethnicity/nationality Identification**
   Try to establish the Ethnicity/nationality of person by just looking at his facial image. This has important applications, specifically in forensics.

In both the above problems, you need to take facial images of people and build a suitable Machine Learning model(s).
Typically, image processing related problems are better served by CNN and its variants. As part of the assignment, you need to compare the traditional Machine Learning approaches with Deep Learning approaches.
Another concept that you need to learn in context of the above problems is that of Metric Learning, which a supervised dimensionality reduction technique.

(some articles related to Deep Learning & Metric Learning will be posted on NALANDA)

What you need to do:

1. Model the problem as a ML problem
2. Pre-process the data appropriately
3. Collect data for training/testing
4. Build Model(s)
5. Model comparison and selection
6. Result and Analysis
7. Conclusions

Weightage:
5% - for theoretical understanding of the underlying ML concepts
10% - implementation

Important Dates:
Finalizing Problem: **11th November, 2018 (send a mail to TA with named Group XX). Group numbers will be allocated by tomorrow.**
Assignment Due (final report and code): **28th November, 2018 (submit your final report to TA with an attached pdf file named Group XX)**

TA – Prerna Kaushik, PhD Scholar (p2013192@pilani.bits-pilani.ac.in)

Plagiarism Policy:
Each group will be required to submit the Turtitin plagiarism report along with the final report. Submission will not be considered if plagiarism report is not attached.

Navneet Goyal