Brief Profile of the Department of CS & E:
The department of Computer Science & Engineering was established in the year 1991. The department offers high-quality undergraduate, postgraduate and doctoral programs. The department has a team of well-experienced faculty, graduated from IIT’s, NIT’s, Central Universities, and other premier Institutes of higher learning. The department provides state-of-art research facilities to generate knowledge and develop technologies in the thrust areas of Computer Science and Engineering.

Highlights of the Course:
- This short term course will be conducted three hours a day with no overlap to the regular office hours.
- The sessions will begin in the evening time, possibly after 5pm.
- Majority topics will be covered with hands-on using Python.

For any query regarding this course, please contact the Coordinators.

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Overview of the Short term course:
This short-term course facilitates upgrading knowledge, skill in the most advanced areas such as Data Science and Machine Learning.

Objectives:
- The program will positively impact the perceived ability to understand recent advances in machine learning and data science.
- Participants will be able to demonstrate knowledge of machine learning techniques to solve real world problems in data science, and various other applications.

Course Content:
- Introduction
  What is Data Science, Real-life examples and Applications, Data Scientist: The most promising Job of the 21st Century, Machine Learning vs. Data Science vs. AI, Machine Learning types, Generics of machine learning approaches.

- Python Essentials
  Installation of Anaconda, Python Editors & IDE's (Anaconda, Jupyter), Primitive Data types, lists, tuples, dictionaries, strings, Data manipulation tools (Operators, Functions, Packages, control structures, Loops, arrays), Importing Data from various sources (CSV, txt, excel), Exporting Data to various formats.

- Probability and Statistics for Data Science
  Basic probability theory, Random variables, Probability distributions, Markov models, Bayesian learning.

- Regression
  Univariate linear regression, multivariate linear regression, Polynomial Regression.

- Classification
  Logistic regression, SVM, Multi-class SVM, Decision trees, K-Nearest Neighbors.

- Ensemble Approaches
  Bagging, Random Forests, Boosting: Adaboost, Gradient boosting.

- Optimization
  Gradient descent, Stochastic gradient descent, Batch gradient descent.

- Clustering
  K-means, Hierarchical and other clustering approaches

- Feature Engineering
  Feature Scaling, Feature Selection: Filter methods, Wrapper methods, Embedded methods.

- Dimensionality Reduction
  Principal component analysis, Linear discriminative analysis, Multiple discriminant analysis, Independent component analysis.

- Neural Networks
  Introduction to neural networks, Back propagation algorithm and theory behind, Introduction to deep learning.

- Recommendation Systems
  Introduction, Types of recommender systems, Content-based, Collaborative filtering: Matrix factorization based approaches, Knowledge-based, and Hybrid techniques, Times series forecasting, multi-criteria decision making, other real time examples.

- Hands-on to the majority of the topics using Python, Take-home project.

Resource Persons: Eminent faculty from IITs, Central Universities, Industry and Senior Faculty from different departments of NIT Warangal, will deliver lectures and conduct hands on sessions.

Registration is open to: Faculty members in all disciplines of Engineering, Sciences, Mathematics, Life sciences, Management, Post Doctoral Fellows, Research Scholars, PG students, UG students who have an aptitude to work in the areas of data sciences and machine learning.

How to Apply:
Eligible candidates may apply by filling the following google form with payment proof on or before 30th November, 2020.

https://forms.gle/iih24MpQhY5Wa3eU6

Registration fee:

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Faculty, Post doctoral fellows , Research Scholars, PG students, UG students</td>
<td>Rs. 1000/-</td>
</tr>
<tr>
<td>Industry participants</td>
<td>Rs. 2000/-</td>
</tr>
</tbody>
</table>

The registration fee may be remitted Online through NEFT, Quick transfer, Gpay, PhonePe, Paytm, or any other UPI to the Bank account given below and upload the proof of remittance in the google form.

Important Note: Please enter course code CSMLDS in remarks while doing transaction. This is mandatory.

Account Number | 62403680215 (Current Account)
Account Name    | Center for Continuing Education NITW
Bank Name       | State Bank of India (SBI)
Branch          | NIT Warangal
IFSC Code       | SBIN0020149

Confirmation of Participation:
On receipt of the google form and fee remittance receipt, participants will be sent confirmation of their participation through email by 04th December, 2020. As the programme is conducted online with hands-on sessions, the number of participants in the workshop is limited to 100. Candidates are advised to register early to avoid disappointment.