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.

Dr. Venkateswara Rao Kagita
Assistant Professor, Department of CSE, NIT Warangal
Mobile: 6281746931, email: venkat.kagita@gmail.com

Dr. M. Sandhya,
Assistant Professor, Department of CSE, NIT Warangal
Mobile: 9394468554, email: msandhya@nitw.ac.in

Centre for Continuing Education of NIT Warangal:
The Centre for Continuing Education of NIT Warangal organizes Continuing Education Programmes and Workshops in the frontier areas of Science, Engineering, Technology, Management, Humanities, Social Science and socially relevant themes on a self-financing basis in three different modes: (i) At NIT Warangal by NIT Warangal (ii) At NIT Warangal in collaboration with other Organizations (iii) By NIT Warangal Faculty at the Host Organization/Institute.

About NIT Warangal:
National Institute of Technology Warangal, formerly known as Regional Engineering College, was established in 1959. Over the years, it has developed into a premier institute of higher learning and is ranked among the top technical education institutions in India. There are 13 Departments, offering eight undergraduate and 32 postgraduate programs besides doctoral programmes. About 5000 students across the country and about 500 international students study in the campus. It is a fully residential campus sprawling over 250 acres with excellent infrastructure, state of the art library, seminar halls, guest houses, and laboratories.

Center for Continuing Education

Online Short Term Course on Machine Learning for Data Science using Python
Course Code: CSMLDS

14th – 23rd December, 2020

Call for Registration and Participation
Coordinators
Dr. Venkateswara Rao Kagita
Dr. M. Sandhya

Organized by
Department of Computer Science and Engineering, NIT Warangal

In association with the
Center for Continuing Education
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
Faculty from different departments of NIT Warangal, Industry R & D 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/J1RXruJvq75zZMzR7

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<thead>
<tr>
<th>Registration fee:</th>
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<tbody>
<tr>
<td>Category</td>
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<tr>
<td>Faculty, Post doctoral fellows , Research Scholars, PG students, UG students</td>
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<tr>
<td>Industry participants</td>
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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.

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<td>IFSC Code</td>
<td>SBIN0020149</td>
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<td>Course Code</td>
<td>CSMLDS</td>
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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.