GAYATRI VIDYA PARISHAD COLLEGE FOR DEGREE AND P.G. COURSES (A)
ENGINEERING AND TECHNOLOGY PROGRAM
RUSHIKONDA, VISAKHAPATNAM - 530045

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

A Report on
Ten Days Short Term Training Programming
on
Machine Learning Using Python

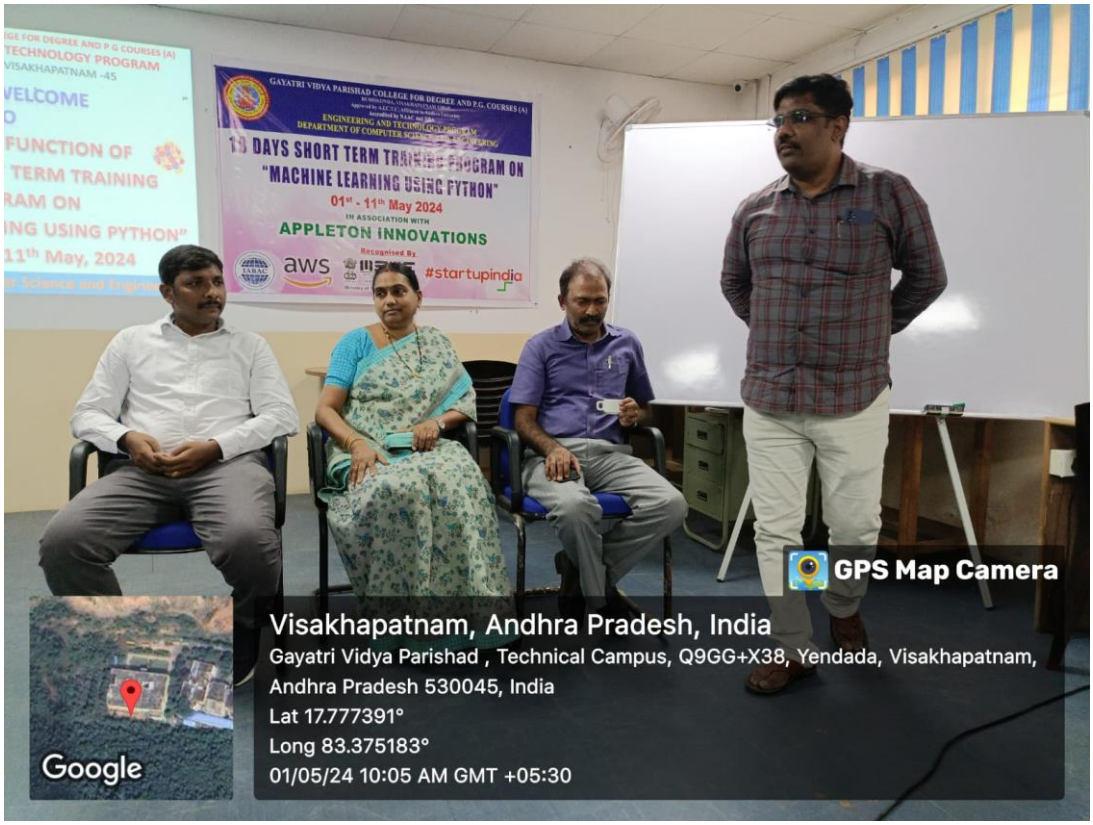
"A Quality Initiative or Teaching and Learning
by
IQAC"

Speaker Details

Mr. K.Bapuji
Appleton Innovations
Visakhapatnam

From
01-05-2024 to 11-05-2024

The 10-day Short Term Training Program on Machine Learning Using Python was held from 01-05-2024 to 11-05-2024 at the Artificial Intelligence & Machine Learning Lab, Department of CSE, E & T Program, GVPCDPGC(A). Thirty faculty members from different streams participated in the 10-day STTP. The objective of the STTP was to provide participants with comprehensive knowledge and practical skills required to develop AI & ML applications. The STTP spanned over ten days and covered various aspects of AI & ML theory, concepts, hands-on, and project development.

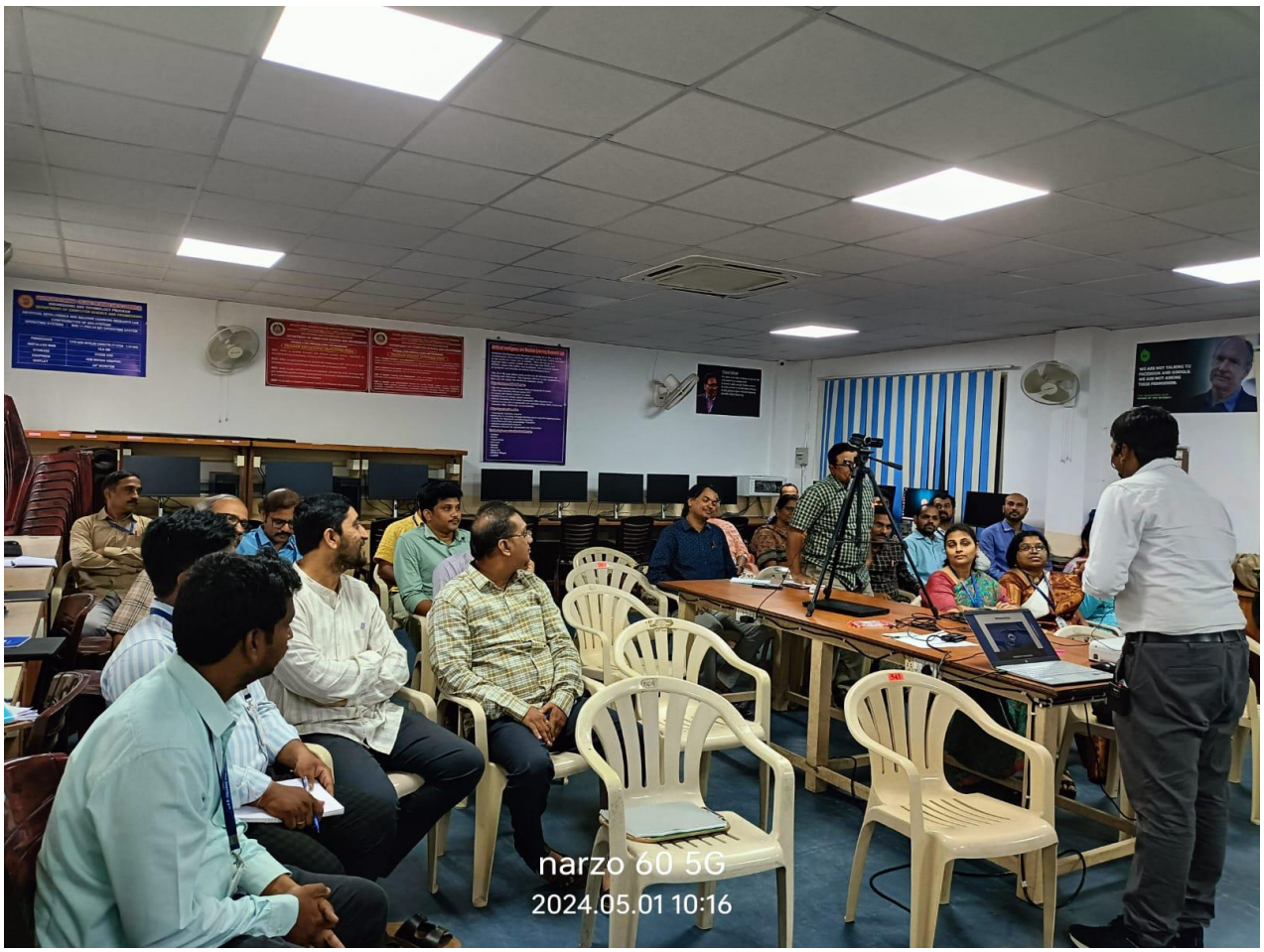


HOD CSE-AI&ML Prof.N.V.Ramana Murty addressing the gathering in the Inaugural Session of 10 Days STTP ON ML using Python

Speech by Principal Prof.S.Rajani in the Inaugural Session

Speech by E&T Director Prof.P.Vinay in the Inaugural Session

Principal Prof. S Rajani presented a memento to the Speaker



Mr. K.Bapuji, Resource Person, delivering his lecture to the participants

Day 1: 1/05/2024 - Wednesday

Morning Session (Module-1: Introduction to AI, Machine Learning and Data Science)

The first day of the 10-day Short Term Training Program (STTP) commenced with an enlightening morning session on the fundamentals of Artificial Intelligence (AI), Machine Learning (ML), and Data Science. Participants were introduced to the core concepts, beginning with a comprehensive overview of AI's definition and scope. The session progressed with an exploration of Data Science and Machine Learning, emphasizing their pivotal roles in contemporary technological advancements. Through engaging discussions, attendees delved into various Use Cases of Machine Learning, gaining insights into its diverse applications across industries. Furthermore, the session touched upon advanced topics like Generative AI, Natural Language Processing (NLP), and Deep Learning, setting a robust foundation for the subsequent modules.

Afternoon Session (Module 2: Python Programming)

Following a stimulating morning, the afternoon session transitioned into Python Programming, a cornerstone skill in the realm of Machine Learning. Participants embarked on an immersive journey into Python's syntax and functionalities, beginning with an introduction to its core concepts. Topics such as Sequences, Iteration, Booleans, and Conditionals were elucidated, laying the groundwork for proficient coding practices. Moreover, attendees delved into the intricacies of Functions, Modules, and Python Data Structures, essential components for data manipulation and analysis. The session culminated with an overview of Object-Oriented Programming (OOPs), providing participants with a holistic understanding of Python's versatile capabilities.

Day 2: 2/05/2024 - Thursday

Morning Session (Module - 3: Machine Learning tools & packages)

Continuing the immersive learning experience, the morning session of Day 2 focused on exploring essential tools and packages utilized in Machine Learning workflows. Participants delved into prominent Data Analysis Tools including NumPy, Pandas, and SciPy, mastering their functionalities for efficient data manipulation and processing. Additionally, the session delved into Data Visualization techniques, leveraging Matplotlib, Seaborn, Plotly, and Bokeh to create insightful visual representations of datasets. Furthermore, attendees gained familiarity with Machine Learning frameworks such as scikit-learn and TensorFlow, essential for implementing predictive models and algorithms.

Afternoon Session (Module - 4: Data analysis using Numpy, Pandas, and Scipy)

In the afternoon session, participants embarked on a practical exploration of data analysis techniques using NumPy, Pandas, and SciPy. Beginning with an introduction to NumPy, attendees learned to leverage its powerful array manipulation capabilities for efficient data

handling. Topics such as Numpy Arrays, Array Properties, and Data Manipulation were thoroughly covered, providing participants with the requisite skills for data preprocessing and transformation. Moreover, the session delved into Pandas, empowering participants to perform in-depth data analysis through Pandas Series, DataFrames, and advanced data manipulation techniques. The session concluded with an overview of SciPy, emphasizing its utility in scientific computing and signal processing applications.

Day 3: 3/05/2024 - Friday

Morning Session (Module - 5: Mathematics and statistics for Machine Learning)

The third day commenced with a comprehensive exploration of Mathematics and Statistics foundational to Machine Learning. Participants engaged in a rigorous study of essential mathematical concepts including Linear Algebra and Calculus, indispensable for understanding ML algorithms. Moreover, the session delved into Statistics, covering key topics such as Central Tendency, Dispersion, and Percentiles, facilitating a deeper comprehension of data distributions and variability. Attendees also explored the significance of Hypothesis testing and statistical inference in the context of ML applications, enriching their analytical capabilities.

Afternoon Session (Module - 6: Python Data Visualization with Seaborn and Matplotlib)

Building upon the morning's theoretical underpinnings, the afternoon session transitioned into practical data visualization techniques using Seaborn and Matplotlib. Participants were introduced to the functionalities of these powerful libraries, enabling them to create visually appealing and informative plots. Through hands-on exercises, attendees gained proficiency in generating Histograms, Scatter Plots, and Heatmaps, leveraging Matplotlib's versatility. Furthermore, the session explored advanced visualization techniques using Seaborn, culminating in the visualization of real-world datasets such as the Iris Flower dataset, fostering a deeper understanding of data exploration and analysis methodologies.

Day 4: 4/05/2024 – Saturday

Morning Session (Module - 7: Recommendation systems)

The fourth day commenced with an insightful morning session dedicated to Recommendation Systems, a pivotal component of modern data-driven applications. Participants delved into the foundational concepts of Recommendation Systems, understanding their significance in personalized user experiences. The session elucidated key principles such as Similarity metrics and Cosine Similarity, essential for building effective recommendation algorithms. Through interactive discussions and practical examples, attendees gained a comprehensive understanding of recommendation strategies, paving the way for hands-on projects.

Afternoon Session (Module - 7: Recommendation systems)

Building upon the morning's theoretical insights, the afternoon session transitioned into practical implementation with hands-on projects on Movie and Restaurant Recommendation Systems. Participants applied their acquired knowledge to develop recommendation algorithms tailored to specific use cases, gaining invaluable experience in data preprocessing, model training, and evaluation. Through collaborative exercises, attendees honed their problem-solving skills while gaining proficiency in deploying recommendation systems in real-world scenarios.

Day 5: 6/05/2024 – Monday

Morning Session (Module - 8: Supervised Machine Learning)

The fifth day commenced with a deep dive into Supervised Machine Learning, a cornerstone technique in predictive analytics. Participants were introduced to various supervised learning algorithms, including Regression and Classification, elucidating their principles and applications. Through engaging discussions and real-world case studies, attendees gained insights into the predictive modeling process, from data preprocessing to model evaluation. The session underscored the

importance of understanding the underlying theory behind supervised learning algorithms, empowering participants to make informed decisions in model selection and deployment.

Afternoon Session (Module - 9: Working with Regression Algorithms)

In the afternoon session, participants delved into the practical aspects of working with Regression Algorithms, essential for predictive modeling tasks. Building upon the morning's theoretical foundations, attendees explored a range of regression techniques, including Linear Regression, Multiple Linear Regression, and Polynomial Regression. Through hands-on projects such as California Housing Price Prediction and Graduate Admission Prediction, participants applied regression algorithms to real-world datasets, gaining practical experience in model training, evaluation, and interpretation.

Day 6: 7/05/2024 – Tuesday

Morning Session (Module - 10: Working with Classification algorithms)

The sixth day commenced with a focus on Classification algorithms, fundamental to various machine learning applications, including image recognition, sentiment analysis, and fraud detection. Participants delved into popular classification algorithms such as K-Nearest Neighbors (K-NN), Naive-Bayes, Decision Trees, Logistic Regression, and Support Vector Machines (SVM). Through interactive discussions and hands-on exercises, attendees gained proficiency in model training, evaluation, and hyperparameter tuning, preparing them for real-world classification tasks.

Afternoon Session (Module - 10: Working with Classification algorithms)

Continuing the exploration of Classification algorithms, the afternoon session delved deeper into practical implementation with a hands-on project on SMS Spam Filtering. Participants applied their knowledge of

classification techniques to develop an effective spam detection system, leveraging real-world SMS datasets. Through collaborative exercises and guided experimentation, attendees refined their classification skills while gaining insights into data preprocessing, feature engineering, and model optimization.

Day 7: 8/05/2024 - Wednesday

Morning Session (Module - 10: Working with Classification algorithms)

The seventh day commenced with a continuation of the exploration of Classification algorithms, focusing on a hands-on project on Income Qualification Prediction. Participants applied their expertise in classification techniques to tackle a real-world problem, predicting the income qualification of individuals based on demographic and socioeconomic factors. Through practical implementation and guided mentorship, attendees refined their classification skills while gaining practical insights into feature selection, model interpretation, and performance evaluation.

Afternoon Session (Module - 11: Unsupervised Machine Learning)

In the afternoon session, participants transitioned into the realm of Unsupervised Machine Learning, exploring techniques for pattern recognition and data clustering. The session commenced with an introduction to K-means clustering, a popular unsupervised learning algorithm used for data segmentation and clustering analysis. Participants gained insights into anomaly detection techniques and practical applications of unsupervised learning in anomaly detection and data clustering. Through hands-on projects on K-Means Clustering, attendees applied their knowledge to real-world datasets, gaining practical experience in unsupervised learning methodologies.

Day 8: 9/05/2024 – Thursday

Morning Session (Module - 12: HTTP API Requests)

On the eighth day of the training program, participants delved into the domain of HTTP API Requests, a crucial aspect of modern web development and data integration. The morning session commenced with an exploration of HTTP methods and REST APIs, providing participants with a comprehensive understanding of web communication protocols. Attendees learned to leverage the Requests module in Python for accessing web APIs, with a focus on practical applications such as retrieving weather data. Furthermore, participants gained proficiency in working with JSON data, a ubiquitous format for exchanging data between web servers and clients.

Afternoon Session (Module - 13: Deploying Machine Learning Model using Flask)

Continuing the exploration of web development and deployment, the afternoon session focused on deploying Machine Learning models using the Flask framework. Participants were introduced to web development fundamentals, including HTML, CSS, and JavaScript, essential for building interactive user interfaces. Through hands-on projects and guided tutorials, attendees gained practical experience in developing web applications using Flask, a lightweight and versatile web framework for Python. Furthermore, participants learned about object serialization techniques using Pickle, facilitating the seamless integration of ML models into web applications.

Day 9: 10/05/2024 - Friday

Morning Session (Module - 13: Deploying Machine Learning Model using Flask)

The penultimate day of the training program commenced with a continuation of the exploration of deploying Machine Learning models using Flask. Participants engaged in a hands-on project focused on deploying a Spam SMS detection model, applying their knowledge of Flask and object serialization techniques. Through guided tutorials and collaborative exercises, attendees gained practical experience in building and deploying ML-powered web applications, fostering a deeper understanding of the end-to-end development lifecycle.

Afternoon Session (Module - 14: Generative AI)

In the afternoon session, participants delved into the cutting-edge domain of Generative AI, exploring advanced techniques for generating realistic and creative content. The session commenced with an introduction to Generative AI and Prompt Engineering, providing participants with insights into recent advancements in large language models (LLMs). Attendees learned about key terminologies and methodologies employed in Generative AI, with a focus on real-world applications and use cases. Through interactive discussions and case studies, participants gained a deeper appreciation for the transformative potential of Generative AI across various industries.

Day 10: 11/05/2024 – Saturday

Morning Session (Module - 13: PDF Query Application using LLM and Langchain)

On the final day of the training program, participants embarked on a hands-on project focused on building a PDF Query Application using Large Language Models (LLMs) and Langchain. Attendees applied their knowledge of Generative AI and natural language processing techniques to develop a powerful tool for querying and extracting information from PDF documents. Through guided tutorials and practical exercises, participants gained practical experience in leveraging LLMs for document analysis and information retrieval, culminating in the development of a functional PDF Query Application.

Afternoon Session (Module - 15: Reinforcement Learning)

The training program concluded with an exploration of Reinforcement Learning, a paradigm of machine learning concerned with decision-making and autonomous agent behavior. Participants were introduced to the fundamental concepts of Reinforcement Learning, including Markov Decision Processes (MDPs) and reward optimization. Through interactive discussions and case studies, attendees gained insights into various practical applications of Reinforcement Learning, ranging from

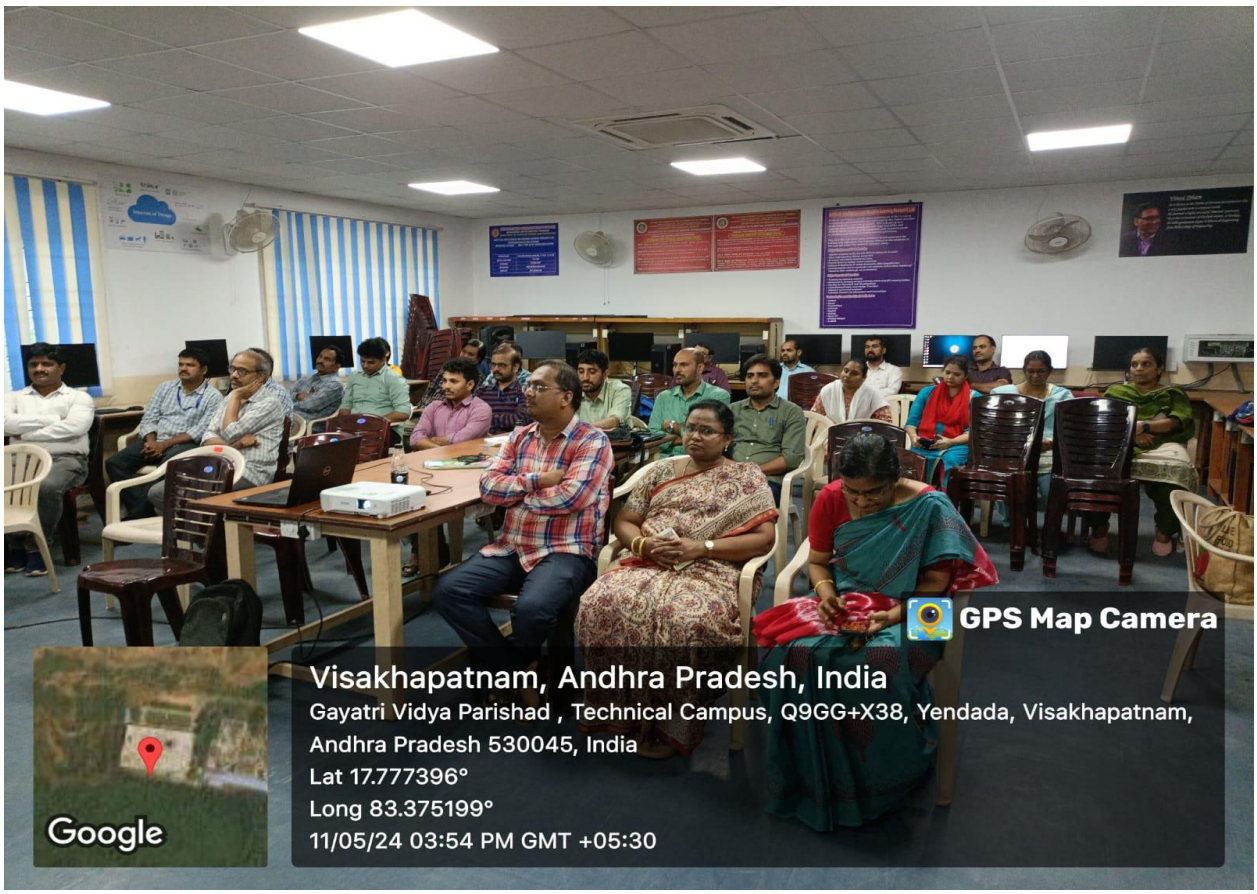
game playing to robotics and autonomous systems. The session underscored the significance of Reinforcement Learning in enabling intelligent decision-making and adaptive behavior in complex environments.

Test on the Skills acquired in these 10 days Training Period

Following the conclusion of the training program, participants were assessed on the skills and knowledge acquired over the 10-day period. The test encompassed theoretical concepts, practical implementation, and problem-solving skills across various modules, providing participants with an opportunity to demonstrate their proficiency and understanding of machine learning principles and techniques. The test served as a comprehensive evaluation of participants' readiness to apply their newfound skills in real-world scenarios, marking the culmination of an intensive and rewarding learning journey.

Director R&D, Gayatri Vidya Parishad Prof.P.V.Sharma addressing the participants on the valedictory session of 10 Days STTP on ML using Python

Principal GVPCDPGC(A) Prof.K.S.Bose addressing the participants on the valedictory session of 10 Days STTP on ML using Python



Participants at the valedictory session of 10 Days STTP on ML using Python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Feedback by non-Computer Engineering Faculty about 10 Days STTP on ML using Python

Falicitation of the Resource Person by R&D Director Prof.P.V.Sharma, Principal Prof.K.S.Bose, E&T Director Prof.P.Vinay, HOD CSE-AI&ML Prof.N.V.Ramana Murty and IQAC Coordinator Dr.Bh.Padma

ముగిసిన అధ్యాపకుల శిక్షణ

సాగర్‌నగర్, న్యూస్‌టుడే: రుషికొండ గాయత్రీ విద్యా పరిషత్ (జీవీపీ) కళాశాలలో 'మెషిన్ లెర్నింగ్ యూజింగ్ పైథాన్' అనే అంశంపై పది రోజుల పాటు జరిగిన ఫ్యాకల్టీ డెవలప్‌మెంట్ ప్రోగ్రాం (ఎఫ్‌డీపీ) శనివారంతో ముగిసింది. జీవీపీ ఆర్ అండ్ డీ డైరెక్టర్ పి.వి.శర్మ, ప్రిన్సిపల్ ప్రొఫెసర్ కె.ఎస్.బోస్, డైరెక్టర్ ప్రొఫెసర్ పి.వి.వినయ్, సీఎస్ఈ విభాగాధిపతి ప్రొఫెసర్ ఎన్.వి.రమణమూర్తి మాట్లాడారు. ప్రస్తుత తరుణంలో సాంకేతిక రంగంలో మెషిన్ లెర్నింగ్ ప్రాధాన్యం, మెరుగైన బోధనకు అవసరమైన విధానాల గురించి వివరించారు. శిక్షణకు రీసోర్స్ పర్సన్‌గా వ్యవహరించిన అపిల్‌టన్ ఇన్నోవేషన్స్ సీఈవో కె.భాపూజీని సత్కరించారు. దాదాపు 30 మంది అధ్యాపకులు పాల్గొన్నారు.

"మెషిన్ లెర్నింగ్ విత్ పైథాన్"పై 10 రోజుల ఫ్యాకల్టీ డెవలప్‌మెంట్ ప్రోగ్రామ్‌లో 30 మంది అధ్యాపకులకు శిక్షణ

విశాఖపట్నం, (విశాఖ సమాచారం): గాయత్రీవిద్యా పరిషత్ డిగ్రీ మరియు పీజీ కోర్సుల కళాశాల రుషికొండ క్యాంపస్‌లో "మెషిన్ లెర్నింగ్ విత్ పైథాన్"పై 10 రోజుల ఫ్యాకల్టీ డెవలప్‌మెంట్ ప్రోగ్రామ్ సీఎస్ఈ (ఎఐ మరియు ఎంఎల్) డిపార్ట్‌మెంట్‌లో ఈరోజు పూర్తయింది. జివిపి వ్యవస్థాపక సభ్యుడు ప్రొఫెసర్ పి.వి.శర్మ హాజరయ్యారు. ప్రస్తుత దృష్టాంతంలో మెషిన్ లెర్నింగ్ యొక్క ప్రాముఖ్యతపై తన సందేశాన్ని అందించారు. ప్రొఫెసర్ కె.ఎస్.బోస్ కళాశాల ఐ/సి ప్రిన్సిపాల్, ఈ & టి ప్రోగ్రాం ఇన్‌చార్జ్ డైరెక్టర్ Prof.పి.వి.వినయ్, ప్రొఫెసర్ ఎన్.వి.రమణ మూర్తి, గాయత్రీ విద్యా పరిషత్ డిగ్రీ మరియు పీజీ కోర్సుల కళాశాల పరిశోధన & అభివృద్ధి డైరెక్టర్ (ఎ) మరియు సీఎస్ఈ విభాగం (ఎఐ & ఎంఎల్) యొక్క హెచ్ఓడి ఈ 10 రోజుల ఎఫ్‌డిపిని నిర్వహించవలసిన ఆవశ్యకతను మరియు దాని ప్రభావాన్ని వివరించారు. 10 రోజుల ఎఫ్‌డిపి శిక్షణ కార్యక్రమం యొక్క రిసోర్స్ పర్సన్ శ్రీ కె.బాపూజీ, సీఈఓ, Appleton Innvoationsని సభ్యులు సత్కరించారు. ఈ ఎఫ్‌డిపి కార్యక్రమంలో వివిధ విభాగాలకు చెందిన 30 మంది అధ్యాపకులు శిక్షణ పొందారు.

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Jdnews Vision...

गायत्री विद्या परिषद त्रिपुरी और पीजी महाविद्यालय ,रुशिकोंडा परिसर के सीएसई (एआई और एमएल) विभाग में "पायथन के साथ मशीन लर्निंग" पर 10 दिवसीय संकाय विकास कार्यक्रम आज संपन्न हुआ। जी.वी.पी के संस्थापक सदस्य आचार्य पी.वी. शर्मा शामिल हुए। वर्तमान परिदृश्य में मशीन लर्निंग के महत्व पर अपना संदेश दिया। आचार्य. के.एस. बोस कॉलेज के प्रभारी प्राचार्य, ईएडटी कार्यक्रम प्रभारी निदेशक आचार्य पी.वी. विनय, आचार्य एन.वी.रमण मूर्ति, गायत्री विद्या परिषद अनुसंधान एवं विकास निदेशक (ए) और सीएसई विभाग (एआई एंड एमएल) के विभागाध्यक्ष 10 दिनों में एफडीपी आयोजित करने की आवश्यकता और इसकी प्रभावशीलता के बारे में बताए। 10 दिवसीय एफडीपी प्रशिक्षण कार्यक्रम के रिसोर्स पर्सन के.बापूजी सी.ई.ओ, एपलटन इनोवेशन ,को सदस्यों ने सम्मान किया । इस एफडीपी कार्यक्रम में विभिन्न विभागों के 30 संकाय सदस्यों को प्रशिक्षित किया गया।

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News coverage of 10 Days STTP on ML using Python in different News papers

Group photo of all the STTP participants

Signature of the Co-Convener

Signature of the Convener

Head of the Department
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