Lightning Talks for Data Science Class

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Introduction

Lightning talks are short, focused presentations that are typically around 8 minutes long. They are intended to be quick and engaging, allowing the speaker to deliver key information on a topic and spark interest among the audience. In our data science class, these lightning talks will serve as a platform for students to explore and present various crucial concepts in data science, enhancing understanding and fostering peer learning.

Topics Bank

Students can choose from the following list of topics for their lightning talk. Each topic has a brief description to help guide preparation:

1. **Decision Tree in Regression**
Explore how decision trees are used for regression problems, different from their use in classification.

2. **Time Series ARIMA**
Discuss the ARIMA model and its applications in analyzing and forecasting time series data.

3. **AdaBoost**
Introduce AdaBoost, a popular boosting technique, and its role in enhancing the performance of weak learners.

4. **Ensembling Models**
Cover the basics of model ensembling techniques and their benefits in predictive modeling.

5. **Maintain Model Performance in Production**
Discuss strategies to maintain the performance of machine learning models once they are deployed in production.

6. **PCA (Principal Component Analysis)**
Explain the principle and application of PCA in reducing dimensionality of data.

7. **Data Governance**
Talk about the importance of data governance in ensuring data quality and regulatory compliance.

8. **Data Ethics**
Highlight ethical considerations in data science, including privacy, bias, and fairness.

9. **PyCaret**
Introduce PyCaret, an open-source, low-code machine learning library in Python, and its uses.

10. **Generative AI**
Discuss the concept of generative AI and its applications

11. **Bias and Variance**
Explain the trade-off between bias and variance in machine learning models.

12. **Elastic Net Model**
Cover how the Elastic Net model combines L1 and L2 regularization to improve model performance.

Note: If you wish to present on a topic not included in the list above, please seek approval from your lead instructor, Eng. Esraa.

Rules for Each Talk

1. **Duration**: Each presentation should last no longer than 8 minutes. This helps keep the session dynamic and engaging.
2. **Preparation**: Students should prepare slides or visual aids to support their talk. A maximum of 5 slides is recommended, you can use jupyter notebook to present if you need.
3. **Q&A Session**: After each talk, there should be a brief 2-minute session for questions from the audience.
4. **Content**: The presentation should include a brief introduction to the topic, main concepts, and one or two real-world applications or examples.
5. **Delivery**: Focus on clear and concise communication. Practice delivering your talk to manage time effectively and maintain audience engagement.

Evaluation Criteria

- **Content Accuracy**: How accurately does the presentation reflect the factual and conceptual elements of the topic?
- **Clarity of Presentation**: How clearly are the ideas presented? Are the slides and speech easy to follow?
- **Engagement**: How well does the presenter engage the audience? Are the examples and explanations interesting?
- **Time Management**: How effectively does the presenter manage the 8-minute limit?

Conclusion

Lightning talks are an excellent way for students to deepen their understanding of key data science concepts and improve their presentation skills. By preparing and delivering a talk on one of the topics listed above, students will not only enhance their own learning but also contribute to the learning of their peers.