**In sentiment analysis for data analytics, several types of models can be used depending on the complexity of the data and the desired accuracy. Below are some commonly used models:**

**1. Machine Learning Models**

a. Logistic Regression.

b. Naive Bayes

c. Support Vector Machines (SVM)

d. Random Forests

**2. Deep Learning Models**

a. Recurrent Neural Networks (RNNs)

b. Convolutional Neural Networks (CNNs)

c. Transformer Models

* BERT (Bidirectional Encoder Representations from Transformers)
* GPT (Generative Pre-trained Transformer

**3. Hybrid Models**

**4. Pre-trained Models**

**5. Statistical Models**

**6. Rule-Based Models**

* Use lexicons like:
  + VADER (Valence Aware Dictionary and sEntiment Reasoner) for social media data.
  + SentiWordNet for scoring sentiment at a word level.
* Combine with simple classifiers for rule augmentation.

**For a Small Dataset**

* **Best Option:** Traditional Machine Learning Models (e.g., Logistic Regression, Naive Bayes, or SVM).
* **Why:** These models are simpler, faster, and perform well on limited data.
* **Feature Engineering:** Use techniques like TF-IDF or bag-of-words.

**For a Medium-to-Large Dataset**

* **Best Option:** Deep Learning Models like LSTMs, CNNs, or a combination of both.
* **Why:** These models capture context and sequential dependencies in the text, which enhances accuracy.
* **Embedding Layer:** Use pre-trained embeddings like GloVe or Word2Vec.

**For a Very Large Dataset and Computational Power**

* **Best Option:** Transformer Models (e.g., BERT, RoBERTa, or DistilBERT).
* **Why:**
  + Transformers are state-of-the-art for text classification and sentiment analysis.
  + They leverage contextual embeddings and handle complex patterns effectively.
* **Fine-Tuning:** Train the model on your sentiment analysis dataset to achieve high accuracy.

**Why BERT Could Be the Best Choice?**

* It understands context in a bidirectional manner, capturing nuanced sentiment.
* Works exceptionally well with continuous and complex data.
* Pre-trained versions make it easy to fine-tune without needing a massive dataset.

<https://arxiv.org/abs/2201.03382>

<https://arxiv.org/abs/2403.08217>

<https://ar5iv.labs.arxiv.org/html/2106.02581>

Here are some studies which collectively highlight BERT and its variants as strong candidates for sentiment analysis tasks due to their contextual understanding and adaptability across datasets.