JaGGNoM TECHNOLOGIES

LEADERS IN MACHINE LEARNING AND CLOUD COMPUTING

Introduction

- ML Today
- How We Applied ML
- Future Impact

Executive Summary

- ✓ Problem:--- Lack of User-Friendly Trading Applications
- ✓ Solution:--- Algorithmic Trading Application That Continually Tailors Users Portfolio and Stock Suggestions Over Time.
- ✓ Competitor:--- Stash and other ETF centric trading Applications
- ✓ Keys To Success: --- Fully Customizable User Experience that caters more to the user's risk tolerance level and interests as time passes.

DATA COLLECTION

- S&P 500 DAILY DATA FROM OCTOBER 1st 2018 – Current
  - ADJUSTED CLOSING PRICES: yfinance API
  - ESG VARIABLES: yfinance API
  - NEWS SENTIMENT: Scraping finviz website & nltk package sentiment intensity analyzer.

- CUSTOM API

APPROACH

- DATA GATHERING
- DATA CLEANING
- MACHINE LEARNING MODULE CREATION AND IMPLEMENTATION – PORTFOLIO ANALYSIS
- CHAT BOT CREATED USING TENSOR FLOW
- GUI IMPLEMENTATION AND INTEGRATION

INSIGHTS & COMPLICATIONS

- APPLICATION DEVELOPMENT DILEMAS – Creation and Implementation
- MACHINE LEARNING and THIRD-PARTY PROBLEMS

DEMONSTRATION


```
{"intents": [
{"tag": "greeting",
"patterns": ["Hi", "Greetings", "How is it going?", "How are you", "Hey", "Hola", "Hello", "Good day"],
"responses": ["Hi there", "Hello, thanks for asking", "Good to see you again", "Hi, how can I help?"],
"context": [""]
},
{"tag": "goodbye",
"patterns": ["Bye", "See you later", "Goodbye", "Nice chatting to you, bye", "Till next time"],
"responses": ["Ciao", "See you!", "Have a nice day", "Bye! Come back again soon."],
"context": [""]
},
{"tag": "thanks",
"patterns": ["Thanks", "Thank you", "That's helpful", "Awesome, thanks", "Thanks for helping me"],
"responses": ["Happy to help!", "Any time!", "My pleasure"],
"context": [""]
},
{"tag": "noanswer",
"patterns": [],
"responses": ["Is anyone there?","Sorry, can't understand you", "Please give me more info", "Not sure I understand"],
"context": [""]
},
{"tag": "name",
"patterns": ["what is your name?", "Whats your name?", "What should I call you", "Who are you?"],
"responses": ["Call me Ian", "My name is Ian! What is your name?", "This is Ian! Who am I chatting with?", "You can call me Ian. What's your name?"],
"context_set": ""
},
{"tag": "investment",
"patterns": ["Start investing", "Open an investment portfolio", "Create an investment portfolio", "Investment options"],
"responses": ["It sounds like you need investment advice. Before we proceed I need to gather some personal information"],
"context_set": ""
}
]
}
```

DEMONSTRATION II

```
for i in intents["intents"]:
    for p in i["patterns"]:
        word_list = nltk.word_tokenize(p)
        words.extend(word_list)
        tagged_words.append((word_list, i["tag"]))
        if i["tag"] not in tags:
            t = i["tag"]
            tags.append(t)
```

DEMONSTRATION III

```
train = []

] for t in tagged_words:
    patterns = [lemma.lemmatize(w.lower()) for w in t [0]]
    data = []
    for w in words:
      if w in patterns:
        data.append(1)
      else:
        data.append(0)
    tag_list = []
    for tag in tags:
      if tag == t [1]:
        tag_list.append(1)
      else:
        tag_list.append(0)
    train.append([data, tag_list])
```

DEMONSTRATION IV

```
random.shuffle(train)
```

DEMONSTRATION V

```
train_words = []
train_tags = []

for t in train:
  train_words.append(t[0])
  train_tags.append(t[1])

print(train_words)
print(train_tags)
```

```
[[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
[[0, 1, 0, 0, 0], [1, 0, 0, 0, 0], [1, 0, 0,
```

DEMONSTRATION VI

```
[29] def convert(sentence, words):
       vocabulary = normalize(sentence)
       output = []
       for w in words:
         if w in vocabulary:
           output.append(1)
         else:
           output.append(0)
       return output
```

```
[30] "How are you?"

     convert("How are you?", words)
```

```
     [0,
      0,
      0,
      0,
      0,
      0,
      0,
      0,
      0,
      1,
      1,
      0,
      0,
      0,
      0,
      0,
      0,
      0,
      0,
      1,
      0,
      0,
      0,
      0,
      0,
      0,
      1,
      0,
      0,
```

DEMONSTRATION VII

```
url
```

```
<NgrokTunnel: "http://5d54-104-199-194-102.ngrok.io" -> "http://localhost:8501">
```

CONCLUSIONS

- The Application is conceptually viable but extremely labor intensive
- Implementation date of 10/24/2021 highly possible

NEXT STEPS

- Further Customization of our API
- Further App Implementation and Integration
- Developing a version that does not require cloud computing

Thank You!

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