Presenting. . .
Prompt Engineering in Emacs

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Repositories for following along

github1s.com/mullikine/presentation-prompt-engineering-in-emacs
github1s.com/semiosis/examplary
github1s.com/semiosis/pen.el
github1s.com/semiosis/prompts
github1s.com/semiosis/prompt-engineering-patterns
github1s.com/minimaxir/gpt-3-client

Demo

```
1   ssh -oBatchMode=no shane@124.197.60.232 -p 9922
```

Text Generator

Background knowledge

- `GPT-3` is a seq2seq model (a text generator)
    - It's stochastic but can be configured to be deterministic.

Key concepts

- prompt,
- completion, and
- tokens

Limitations

Combined, the text prompt and generated completion must be below 2048 tokens (roughly ~1500 words).

context-stuffing With only 2048 tokens, you need to make use of your real estate by providing instructions and making implicit information explicit.

Characteristics

- declarative, like `html`
- stochastic, like `problog`
- Unlocks new types of applications
- Speeds up development

generate-vim-command.prompt

```
 1  Vim
 2
 3  Insert "Q: " at the start of the line
 4  :%s/^/Q: /g.
 5  ###
 6  Remove whitespace from the start of each line
 7  :%s/^\s*/\1/g
 8  ###
 9  Join each line with the next line
10  :1,$j
11  ###
12  Make all occurrences of Steve lowercase
13  :%s/Steve/steve/g
14  ###
15  <1>
```
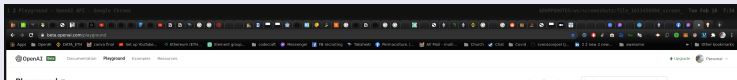
Tasks suitable for GPT-3

Classification

- Tweet Sentiment
- Company categorization
- Labeling parts of speech

- http://github.com/semiosis/prompts/blob/master/prompts/tweet-sentiment-classifier.prompt
- http://github.com/semiosis/prompts/blob/master/prompts/keyword-extraction.prompt

Generation

- Idea Generator

Come up with silly inventions.

Design patterns

```
 1  Vim
 2
 3  Insert "Q: " at the start of the line
 4  :%s/^/Q: /g.
 5  ###
 6  Remove whitespace from the start of each line
 7  :%s/^\s*/\1/g
 8  ###
 9  Join each line with the next line
10  :1,$j
11  ###
12  Make all occurrences of Steve lowercase
13  :%s/Steve/steve/g
14  ###
15  <1>
```

meeting-bullets-to-summary.prompt

```
 1  title: "meeting bullet points to summary"
 2  prompt: |+
 3      Convert my short hand into a first-hand
 4      account of the meeting:
 5
 6      <1>
 7
 8      Summary:
 9  engine: "davinci-instruct-beta"
10  temperature: 0.7
11  max-tokens: 60
```

meeting-bullets-to-summary.prompt

```
1  top-p: 1
2  frequency-penalty: 0.0
3  presence-penalty: 0.0
4  best-of: 1
5  stop-sequences:
6  - "\n\n"
7  conversation-mode: no
8  stitch-max: 0
```

stitch-max Keep stitching together until reaching this limit. This allows a full response for answers which may need n*max-tokens to reach the stop-sequence.

meeting-bullets-to-summary.prompt

```
1  vars:
2  - "notes"
3  examples:
4  - |+
5      Tom: Profits up 50%
6      Jane: New servers are online
7      Kjel: Need more time to fix software
8      Jane: Happy to help
9      Parkman: Beta testing almost done
```

pen-generate-prompt-functions

Generate prompt functions for the files in the prompts directory
Function names are prefixed with `pen-pf-` for easy searching.
`http://github.com/semiosis/prompts`

An example-oriented DSL that can be used to construct and compose NLP tasks.
Why is a DSL needed for this? Just to make the code a little more terse.

Regex

```
https://github.com/pemistahl/grex

1  (def regex
2    "example 1\nexample2" "^example [12]$"
3    "example 2\nexample3" "^example [23]$"
4    "pi4\npi5" "^pi[45]$")
```

Analogy

```
 1   (def analogy
 2     ;; Each line is a training example.
 3     "NNs" "NNs are like genetic algorithms in
 4     that both are systems that learn from
 5     experience"
 6     "Social media" "Social media is like a
 7     market in that both are systems that
 8     coordinate the actions of many
 9     individuals.")
10
11   (def field
12     "chemistry" "study of chemicals"
13     "biology" "study of living things")
```

Something funny

Vexate a simple instruction

```
source › git › mullikine › prompt-engineer-mode › prompts › obfuscate-language.prompt
 1  prompt: |+
 2    The human asks the AI to make a simple description more complicated. The AI responds by
      writing a verbose response full of jargon to explain a simple concept.
 3
 4    Human: explain how to use a drinking fountain.
 5
 6    AI: To activate the mechanized dihydrogen monoxide dispensary service station, use the flanges
      to provide a downward force to the simple circular activation console and continue to apply
      force until the pneumatic system begins operating as intended, which can be surmised at a time
      when the dihydrogen monoxide travels in a parabolic arc which at is greatest exceeds three
      inches from the rounded excess liquid receptacle. Once hydration is completed, cease applying
      force to the console and regard whether or not the dispensary has ceased expelling contents as
      expected.
 7
 8    Human: explain how to play with a dog
 9
10    AI: Being a typical domesticated animal, having been genetically selected for controllability,
      trainability, and general anthropomorphic features and functions, the typical dog possesses
      highly specialized and developed feeding behavior. The typical feeding behavior involves routine
      sustenance intake which can be observed by monitoring changes in animal size. Routine sustenance
      intake involves active and passive feeding habits, and one can gauge animal health by observing
      the relative levels of hydration. During training, reward conditioned reinforcement is applied.
      This involves the practice of rewarding targeted behaviors through the application of
      reinforcers, with the provision that the targeted behavior is observed. Relevant to the
      discussion at hand is the typical active and passive behavior exhibited by a typical dog.
11
12    Human: explain how to <1>
13
14    AI:
15  engine: "davinci"
16  temperature: 0.8
17  max-tokens: 100
18  top-p: 1
19  frequency-penalty: 0.2
20  presence-penalty: 0.4
21  best-of: 1
22  stop-sequences:
23    - "\n"
24  inject-start-text: yes
```

Something funny

How to crack an egg

```
how to crack an egg

Cracking an egg is a basic procedure which can
be achieved by applying a downward force to
the egg. Finding the correct force may require
trial and error, but is essential to the
procedure. A broken egg is an indication that
the force may have been too high or too low.
If it is too high, the shell will be broken,
but the yolk intact. If it is too low, the
force will not be sufficient to rupture the
membrane of the shell, requiring that
additional force be applied
```

Ask the audience

- What type of text to generate
  - Could be code, prose, etc.

Ruby

https://www.twilio.com/blog/
generating-cooking-recipes-openai-gpt3-ruby