EmacsConf 2021...

Imaginary Programming with Emacs

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Following along

Repositories for following along

http://github1s.com/semiosis/pen.el
http://github1s.com/semiosis/prompts
https://mullikine.github.io/posts/imaginary-programming-with-gpt-3/
imaginary programming glossary
imaginary computing glossary
semiosis protocol glossary
Pen.el glossary
https://arxiv.org/abs/2107.13586 Pre-train, Prompt, and Predict
talk transcript

Objectives

- Explain `Imaginary Computing`
  - AI imagination
  - Discussing AI-generated artwork with an AI
  - Intelligent NFTs
  - Imaginary Web
    - Paracosm vs Metaverse
- Explain the `Philosophy` of IP
  - Simulacra and Science Fiction
  - Truth (epistemology and alethiology)
  - Structuralism: Language based on sign relations
- `Demo` Imaginary Programming
  - Demonstrate `ilambda.el`

Imaginary Computing: AI Imagination

Language Models is programming for AIs

LMs are our best friends in the AI model menagerie because they make things intelligible – by understanding our textual languages and how they relate to the world (i.e. AlephAlpha's world model).

Research

- Demis Hassabis: creativity and AI
- `https://aleph-alpha.de/techblog/95_the_end_of_the_era_imagenet`

Imaginary Computing: Emacs as the shell

Example: AI Art described by AI

I use AlephAlpha's multimodal LM to generate `Alt text` for the eww web browser. This is in order to keep websites textual.

- AlephAlpha for alttext; Browsing the paracosm
- Describing Melee's Paintings with AlephAlpha

Intelligent NFTs

An `NFT` is like a trading card, or piece of media that is part of the blockchain web.
For example, `Mickey Mouse` now exists as an `iNFT`. We have consensus over Mickey's image and personality.
An `iNTF`, however, also contains a prompt and associated language model, which is intended to interpret the prompt.

- `https://alethea.ai/`

To understand what a prompt is, please see my previous presentation, or read "Pretrain, Prompt and Predict".

- Creating a playground for GPT-3 in emacs // Bodacious Blog

Imaginary Computing: Potential Dystopia

Information bubbles

- Captain Bible in the Dome of Darkness gameplay {PC Game, 1994} - YouTube

Capitalism for your imagination

- They will take your imagination, too
- Microsoft
  - MS models that reify imagination on their terms
  - The evil twin of `AlephAlpha`.
- Facebook / Meta
  - tweet - Enter a world of Zuck's imagination with Meta

Imaginary Computing: Potential Dystopia

Learning meta-tasks and microtasks

- AI programming tool Copilot helps write up to 30% of code on GitHub - Axios

Private information is sent to the LM to train an AI to perform meta tasks and microtasks.
The AI learns all human capabilities including persuasion.

Solution

Decentralise microtasks like the tower of babel.
Language can be broken up into semiotic triadic relations and decentralised using a p2p network, providing anonymity, protecting individual truth, eroding centralised language power.

Imaginary Computing: Paracosm vs Metaverse

Imaginary Web

The GPT-3 imaginary web is:

- an analog of the World-Wide-Web as imagined by GPT-3.

The free as in freedom GPT models from EleutherAI GPT-3 may also be used to browse the imaginary web as imagined by that LM.
The imaginary web in the near future will be:

- a network of paracosms and metaverses.

Benefits:

- Visit any website you can imagine, even ones that are not real.
- Edit and re-imagine as you go
  - see alternative realities
  - Change the sentiment of the author.
- Peer into the future – read about things that haven't happened yet.

Imaginary Computing: Paracosm vs Metaverse

What is rich media these days?

Rich media In the World Wide Web of the 90s and 00s, rich media was considered to be large files including images and music. In the 2010s, this has become access to information behind a paywall and in the 2020s, this will be access to intelligent and truthful media.

emacs

- Looking-Glass: An imaginary-web browser for emacs
- Browsing the imaginary web
- Search the web/imaginary web without Google
- Use AI to empower people to understand rich media
  - How to create a textual description of Rich Media

Imaginary Computing: Paracosm vs Metaverse

more emacs

- Imaginary interpreters
- Imaginary interpreters: Prolog example
- example-oriented lanugages
- Autofixing code based on error messages
- Imaginary equivalence testing
- Create BNF from descriptions and interpret BNF
- Reversible computing (input or program from output)

[U+0FCB]

The semiosis logo is the Tibetan World Triad which represents the `Rule of Three`. e.g. Generate comment from function signature and body, generate function body from signature and comment, generate signature from comment and program, generate program from input and output, generate input from program and output. It also represents the semiotic triadic relationship.

Paracosm vs Metaverse

Definitions

- Paracosm
  - Privacy
  - Personal truth
  - Freedom of imagination
    - If you want to be able to utilise an AI's imagination, you must now do it via someone else's definition of morality.
    - A paracosm is your safe place. Your own imaginary metaverse. Your personal truth. This is what is at stake.
- Metaverse
  - Getting cozy with Mark Zuckerberg's imaginarium, an intellectual prison
  - An AI paying a Dowry.
  - An AI NFT elevated above a human.
  - A corporation that indoctrinates your children into a truth information bubble, makes money off your dreams, people playing God each with other.

Simulacra and Science Fiction

Jean Baudrillard speaks about the gap between the real and the imaginary.
We no longer imagine a world radically different from the real one, but rather a world that's a mere expansion of the real one.
In the postmodern society the gap between the real and the imaginary disappears completely, and we are no longer capable of ideal projections (of imagining new worlds).
We can only imagine mere reconfigurations of our world, or simply relive the ideal projections of past times.

Philosophy

Truth (epistemology and alethiology)

The Future of Humanity Institute (Oxford) seems to think this is an important topic.

- 2110.06674 Truthful AI
- Datasets are a source of constructivist truth
- Language models are snaphots of society, and a source of several types of truth
  - Symbolic Knowledge Distillation
- Blockchain is a source of consensus, a type of truth
  - `https://mullikine.github.io/posts/language-models-as-truth/`

Philosophy

Structuralism: Language based on sign relations

What do these things have in common:

- Universal Grammar (UG) / Language Acquisition
- C++ template metaprogramming
- GPT-3 / Foundation models

Foundational knowledge exists at compile-time (DNA, preprocessor, training).

Philosophy

`http://github.com/semiosis/glossaries-gh/blob/master/semiotics.txt`

Structuralism: Language based on sign relations

Structural linguistics / structuralism is the theoretical position that finds meaning in the relation between things, rather than in things in isolation.
In other words, it gives primacy to pattern over substance.
Such meanings may be either part of a universal pattern or culturally determined.
Denotes schools or theories in which language is conceived as a self-contained, self- regulating semiotic system whose elements are defined by their relationship to other elements within the system.

Freedom

Data privacy

The models find useful data from more than just your current file.

- `https://mullikine.github.io/posts/imagine-a-project-with-codex/`

Freedom and GPL-3

The problem, with LMs: they are so large and hidden behind SAAS, they can see anything public (they are license-blinded).

Solution: Freedom and blockchain

- Language models are ballooning in size like cancer
- Break up the language model into semiotic triadic relation
  - semiotic NFTs
  - Propose a decentralised triadic relations network.
  - `https://semiosis.github.io/protocol/`
  - `http://github.com/semiosis/glossaries-gh/blob/master/semiosis-protocol.txt`

Imaginary Programming

Methodology

Interactively use the language model to imagine.

Paradigm

Imaginary programming is an extension of literate programming.

- Literate programming with `org-mode`

Practical application: mocking APIs

As you can see, anything inside the `ieval/m` macro does not have to be valid emacs lisp.

```
1  (ieval/m
2   (curl -s
3    "https://api.github.com/user/semiosis/repos?per_page=10&page=1"))
```

```
"\"[((name . \\\"guix\\\") (description . \\\"The GNU package manager\\\") (updated_at . \\\"2014-04-21T18
\\\"2014-04-21T18:49:59Z\\\") (pushed_at . \\\"2014-04-21T18:49:59Z\\\")) ((name . \\\"guix-patches\\\")
\\\"Packages from the GNU guix package manager\\\") (updated_at . \\\"2014-04-21T18:49:59Z\\\") (created_a
\\\"2014-04-21T18:49:59Z\\\") (pushed_at . \\\"2014-04-21T18:49:59Z\\\")) ((name . \\\"guix-patches-all\\\
\\\"Packages from the GNU guix package manager\\\") (updated_at . \\\"2014-04-21T18:49:59\""
```

Blockchain and a Language model is all you need

A LM is only enough while we can agree on it, but that is changing.
I hope that soon language power will be hidden behind blockchains.

Configure the language model / truth source

```
Hide pen-fav-programming-language: String: Emacs Lisp
   [ State ]: SAVED and set.
   By setting pen-fav-programming-language, you set a default langua

Show Value pen-fav-world-language
   By setting pen-fav-world-language, you set a default language to

Hide pen-force-engine: String: OpenAI Codex
   [ State ]: SAVED and set.
   Force using this engine
```

i (ilambda.el)

- `https://semiosis.github.io/ilambda/`

ilambda.el

Code

An IP library named *i*lambda.el for emacs.

source `http://github.com/semiosis/pen.el/blob/master/src/ilambda.el`

other languages (WIP) `http://github.com/semiosis/ilambda`

Explanation

- a bit like a functional programming library in that you will find a set of functions and macros for working with LMs.

`ieval`

`ieval` will simply evaluate the provided string/sexp as emacs lisp code. You must provide `ieval` with, firstly, the preceding code, which may be, for example, a function definition or package requires, etc. and, secondly, evaluated expression. Either argument can either be a raw string containing code or a sexp, but the expression will be "one-line-ized" for the prompt.