Introducing Python & Poetry

Sara Morrell and Avery Blankenship
ENGL/HIST 3340
Professors Jessica Linker and Erika Boeckeler
Fall 2024
http://bit.ly/fa24-linker-boeckeler-python-poetry

Northeastern University
NULab for Texts, Maps, and Networks

Feel free to ask questions at any point during the presentation!

Agenda

- Discussion of Google Verse-by-Verse and reading
- Algorithms and artificial intelligence
- Computational poetry: FA24_Linker-Boeckeler_HouseOfDustExample.ipynb
- Introduction to Python and Google Colab: FA24_Linker-Boeckeler_Colab&IntroToPythonPoetry.ipynb
- Mad Libs activity and writing computational poetry: FA24_Linker-Boeckeler_PythonPoetry_ComputationalPoemTemplate.ipynb

Feel free to ask questions at any point during the presentation!

Teaching Materials

Slides, Python notebooks, class activities, and the shared questions document can be found in the shared Google Drive folder FA24-PythonPoetry-StudentAccess at:

http://bit.ly/fa24-linker-boeckeler-python-poetry

To run the Python notebooks in Google Colab you will need to sign into Google Drive.

Feel free to ask questions at any point during the presentation!

Google Verse-by-Verse

Go to:

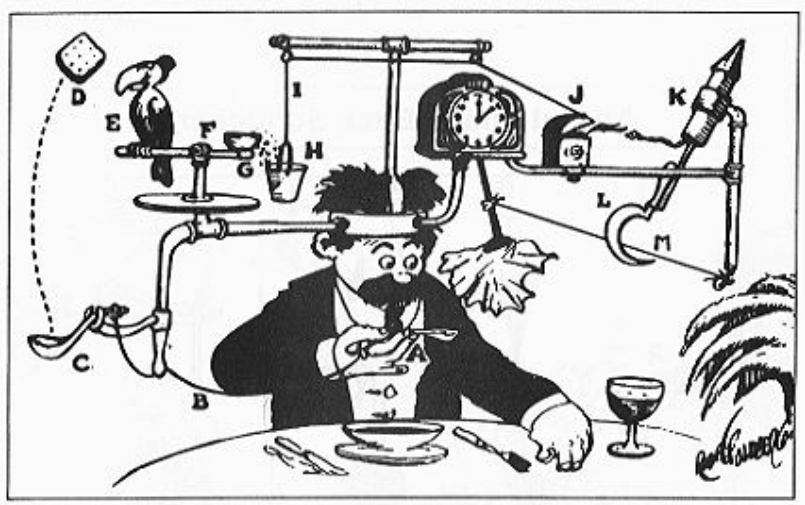
https://sites.research.google/versebyverse/

Sample of poets whose works are included in Verse by Verse

Feel free to ask questions at any point during the presentation!

Discussion: A Box, Darkly

- Does anyone have any questions about the reading?
- Why might it matter for code to have style or to be pleasurable to read?
- Why might one bother writing deliberately confusing programs or weird languages?



Rube Goldberg's "Self-Operating Napkin" found in Wikimedia Commons

Feel free to ask questions at any point during the presentation!

Algorithms and Artificial Intelligence

Northeastern University
NULab for Texts, Maps, and Networks

Feel free to ask questions at any point during the presentation!

Algorithms

- "[a] set of instructions that is designed to accomplish a task" (National Library of Medicine).
- A recipe for baking cookies, code to tell whether a picture is of a cat or a dog, and code to write a poem about a cat are examples of algorithms

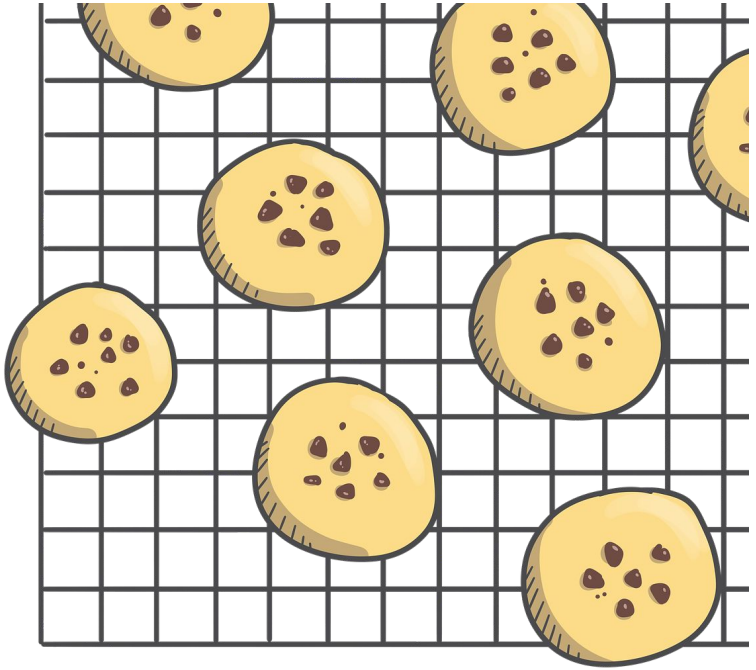


Image by wixin_56k, Pixabay

Feel free to ask questions at any point during the presentation!

Important AI Vocabulary

- Artificial Intelligence (AI): A technology that combines datasets and computer science to solve problems and mimic human intelligence
- Supervised machine learning: An algorithm that classifies or predicts based on its prior training with a labeled dataset
- Unsupervised machine learning: An algorithm that finds patterns or groups in data without prior training
- Generative AI: An algorithm that produces content
- Markov Chains: A series of occurrences where each one depends only on the one directly before
- Word Embedding: A numerical representation of a word

Feel free to ask questions at any point during the presentation!

Generative AI Summary

- Uses unsupervised machine learning and other computational methods, such as Markov chains and embeddings, to learn how to generate content
- The type of dataset used to develop the generative AI determines what it can do

Image by DALL-E 3 found in "Text Embeddings: Comprehensive Guide" by Mariya Mansurova

Feel free to ask questions at any point during the presentation!

Example: Verse by Verse

- Google Verse by Verse
  - Uses a generative model to create lines of poetry
  - Uses a semantic model to determine the best next line of poetry
- About Google Semantic Experiences

Sample of poets whose works are included in Verse by Verse

Feel free to ask questions at any point during the presentation!

AI Ethics Resources

- The Institute for Experiential AI at Northeastern
- United Nations Educational, Scientific and Cultural Organization (UNESCO) Global Forum on the Ethics of AI 2024

Image found in Changing the Landscape of AI Governance, UNESCO

Feel free to ask questions at any point during the presentation!

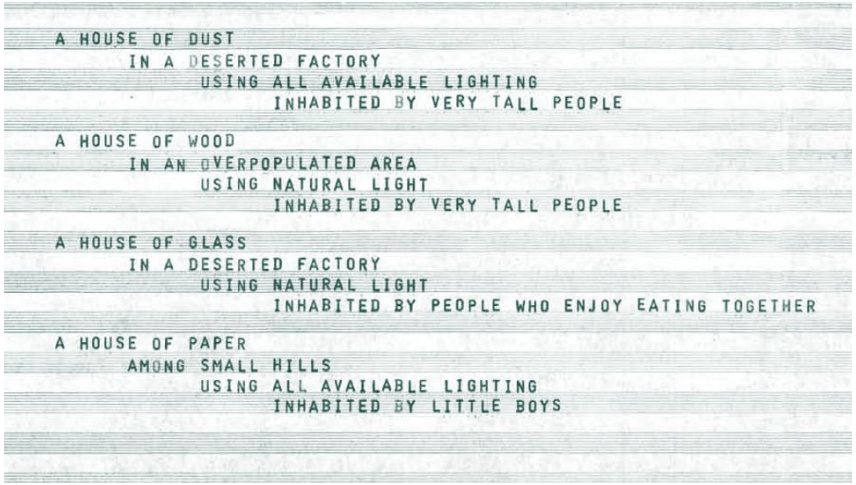
Computational Poetry

Northeastern University
NULab for Texts, Maps, and Networks

Feel free to ask questions at any point during the presentation!

Example: “The House of Dust”

- Poem by Alison Knowles and James Tenney (1967)
- Code reimplemented in Python by Nick Montfort and updated as teaching example: StudentAccess_FA24_Linker-Boeckeler_HouseOfDustExample.ipynb



Printout of “The House of Dust,” Gebr König Verlag, Cologne, 1967

Feel free to ask questions at any point during the presentation!

“The House of Dust” Discussion

- Which parts of each stanza are the same every time and which are different? Why?
- How does computational poetry differ from poetry written using generative AI?

Feel free to ask questions at any point during the presentation!

Writing Poetry in Python

- Computational poetry using predefined words and lines
  - "House of Dust" by Alison Knowles and James Tenney (1967)
  - "A Travesty Generator for Micros" by Hugh Kenner and Joseph O'Rourke (1984)
  - *Travesty Generator* by Lillian-Yvonne Bertram (2019)
- AI-generated poetry

Feel free to ask questions at any point during the presentation!

Python & Google Colaboratory

Northeastern University
NULab for Texts, Maps, and Networks

Feel free to ask questions at any point during the presentation!

Python Summary

The Python code in this workshop covers these topics:

- Variables
- Strings
- Lists
- Dictionaries
- Selecting data from lists and dictionaries
- Print function
- Import random module
- Random.randint() function

Feel free to ask questions at any point during the presentation!

Python Google Colab Notebooks

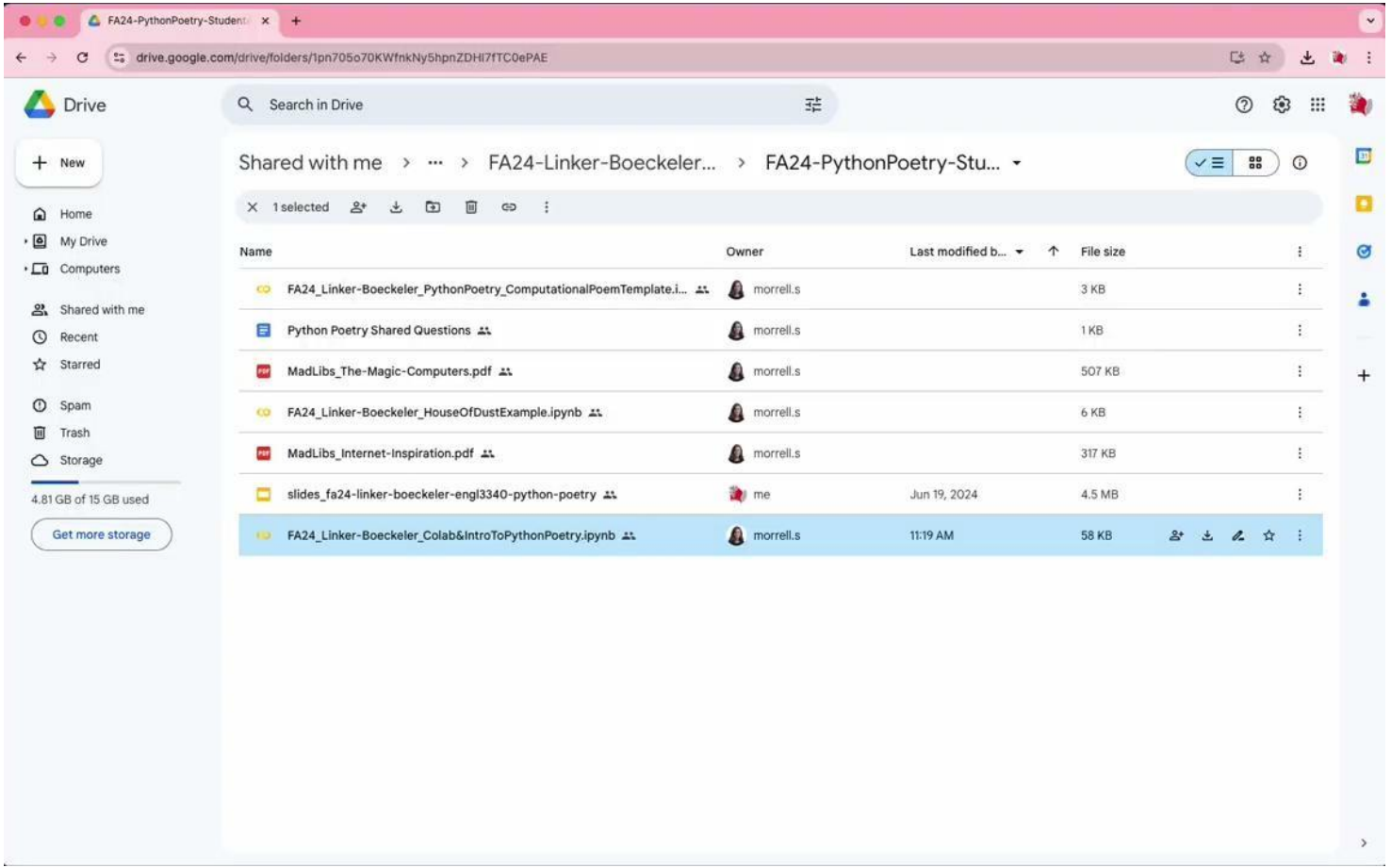
FA24_Linker-Boeckeler_Colab&IntroToPythonPoetry.ipynb: This notebook introduces the fundamentals of Python and provides example code for creating computational poetry. The notebook can be accessed by:

- Signing in to your Google account
- Clicking the above link or opening the notebook in the shared Google Drive folder
- Copying the notebook to your Google Drive by selecting 'Save a copy in Drive' under the 'File' menu in the upper left corner of the notebook

Please feel free to ask questions at any time or add them to the shared questions document in the Google Drive folder.

Feel free to ask questions at any point during the presentation!

Install Google Colab



Feel free to ask questions at any point during the presentation!

Mad Libs Activity

1. Traditional Mad Libs Practice: Work with a partner to fill in the words on the first sheet, then fill in blanks on the second Mad Libs sheet. This is just to familiarize you with Mad Libs.
2. Randomly Selected Mad Libs: Fill out the table with words on the first sheet, then roll the dice to randomly select words to use in each of the blanks on the second Mad Libs sheet. This is similar to how you will write your computational poem in Python.

Feel free to ask questions at any point during the presentation!

Computational Poetry

FA24_Linker-Boeckeler_PythonPoetry_ComputationalPoemTemplate.ipynb: This notebook is a template with some starter code to help you create your own computational poem.

Once you have the first draft of your poem:

- Try adding some attributes from “The House of Dust”
  - Make your poem automatically repeat with variations each time
  - Vary the timing of when lines or stanzas appear
- Try varying the poem output based on user input

Feel free to ask questions at any point during the presentation!

Post-exploration group discussion

- Do you have any reflections on using Python for constructing poetry?
- How does the writing process differ from traditional poetry?
- How might the code impact the readers perception of the poem?
- How might you use this in the future?

Feel free to ask questions at any point during the presentation!

Thank you!

—Developed by Sara Morrell, Dipa Desai, Kasya O'Connor Grant, Avery Blankenship, and Claire Lavarreda

- For more information on the DITI, please see: https://bit.ly/diti-about
- Schedule an appointment with us! https://bit.ly/diti-meeting
- If you have any questions, contact us at: nulab.info@gmail.com
- We'd love your feedback! Please fill out a short survey here: https://bit.ly/diti-feedback

Northeastern University
NULab for Texts, Maps, and Networks

Feel free to ask questions at any point during the presentation!