Using ChatGPT to reduce Professor Workload

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Why should students have all the fun? This session shows how faculty can be **productive** and **creative**.

What is ChatGPT?

OpenAI is a company selling easy access to its deep learning models. These models are massive, requiring around $100 million dollars of computer time to train. The latest model is estimated to have 1 trillion parameters.

Advantages: natural language (no coding!), use in a browser, and it has a massive amount of information about the world.

Disadvantages: based on probability, so it can't *calculate* answers. Instead, it knows words that typically go together, and uses those to respond to your prompt.

Using it to code

With minimal prompts, it can write functional computer code.

```vbnet
# define the substitution rule
sub_rule <- c("a"="d", "b"="e", "c"="f", "d"="g", "e"="h",
              "f"="i", "g"="j", "h"="k", "i"="l", "j"="m",
              "k"="n", "l"="o", "m"="p", "n"="q", "o"="r",
              "p"="s", "q"="t", "r"="u", "s"="v", "t"="w",
              "u"="x", "v"="y", "w"="z", "x"="a", "y"="b", "z"="c")

# encoding function
encode <- function(text) {
  # convert to lowercase and split into individual letters
  text <- strsplit(tolower(text), "")[[1]]
  # substitute letters using the rule
  encoded <- sub_rule[text]
  # join the encoded letters back into a single string
  return(paste0(encoded, collapse=""))
}

# decoding function
decode <- function(text) {
  # split into individual letters
  text <- strsplit(text, "")[[1]]
  # reverse the substitution rule to decode the text
  decoded <- sapply(text, function(x) names(sub_rule)[x == sub_rule])
  # join the decoded letters back into a single string
  return(paste0(decoded, collapse=""))
}
```

Test Banks

Rapidly generate multiple-choice test banks from a list of concepts

```
Which of the following is an example of a
preventative control in the context of ARC?

a. Requiring employees to take annual
ethics training
b. Separating the duties of authorization,
recording, and custody
c. Reviewing reports for anomalies
d. Instituting disciplinary actions against
employees who violate company policies

Answer: b. Separating the duties of
authorization, recording, and custody is a
preventative control because it is designed
to reduce the risk of fraud by ensuring
that no single employee has too much
control over a transaction.
```
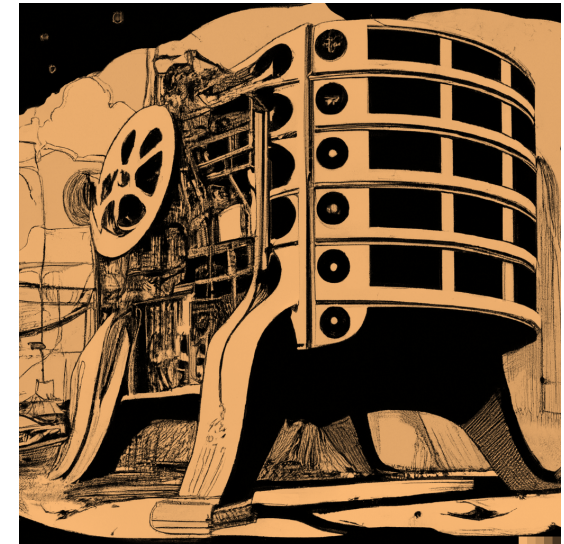
Case Studies / Scenarios

Use prompts to generate examples for concepts.

```
Example of a penetration test:

A large financial institution hires a
cybersecurity firm to conduct a penetration
test on their network. During the test, the
firm discovers a vulnerability in the
institution's firewall that could be
exploited by attackers to gain access to
sensitive financial information. The
institution immediately patches the
vulnerability and improves their overall
security posture as a result of the
penetration test. This demonstrates the
importance of regular penetration testing
to identify vulnerabilities and improve
security measures.
```

Images

Use DALL-E to generate custom images for your assignments

DALL-E: *"very large printing press, surrealist style, science fiction, dr. who"*

Creative writing

What about using poetry to teach about a database's primary / foreign keys?

```
A primary key, a unique identifier,
For each row in a table, it's a must-have,
Without it, confusion would be the ruler,
For data integrity, it is a lifesaver.

Like a lock that secures a treasure chest,
A primary key ensures data is secure,
With it, data can be accessed and processed,
And reporting and analysis can be pure.

So let us sing the praise of the primary key,
For it is the backbone of every database,
It helps to keep the data neat and tidy,
And ensures that it is always up to date.
```