REDESIGNING COMPLEXITY AT PFIZER

Complexity describes how difficult a particular clinical trial is to run. With relevant and accurate complexity metrics, Pfizer Global Clinical Supply (GCS) can optimally allocate limited resources among hundreds of clinical trials.

WE DELIVERED...
- detailed recommendations for autofill
- a Python program running the new model to calculate complexity scores
- tables and graphs visualized in Spotfire

PAIN POINTS
- manual entry necessitates a limited question set that lacks nuance
- lots of historical data exists in plain-text documents but it’s prohibitively expensive and slow to manually enter it into the formatted data set
- updates are rarely captured and overwrite existing data
- scoring does not account for missing data; trials with more data score higher even when the data present indicates low complexity, and vice versa
- overly simple averaging scheme means that most trials fall into a meaningless “medium” category
- text heavy interface is a bad choice for comparing multiple trials
- too much irrelevant detail overwhelms the user; different users want to sort and filter for different details
- single dashboard page is crowded and doing too many things at once

COMPLEXITY SCORING AND VISUALIZATION

1. Sum
2. Map
3. Score
- final score represents percent of trials that are less complex than this trial (i.e. trial is more complex than score % of trials)
- 0 to 1 scale allows for clear quartile distinctions
- area specific scores combine into an overall score
- scoring is question-independent; easily add or remove questions

SUGGESTIONS FOR AUTOFill WITH ML

WHAT FOR
- Large Language Models
  - processing “human language” documents
- Machine Learning Classification
  - processing unstructured text chunks

HOW
1. provide structured, plain text trial documents
2. treat the data as a structured document and analyses grammar and syntax
3. ask questions and receive answers in natural language (“How many countries will the product be delivered to?” “13 countries including ...)”
4. convert answers into computer data (e.g. countries = 13) if clear; else flag question for manual review

IMPACT
- autofilling data will significantly reduce manual data entry saving time, money, and eliminating frustration
- data quality will improve as missing historical data can be automatically filled in
- the number of questions asked per trial is no longer limited; expanded question set can capture more nuance
- automatic re-parsing when updated trial documents become available will keep data recent and relevant
- manual intervention is limited to verification; data points with low certainty are presented to humans for review