AI as an Inventing Tool – Intersections with Novelty, Nonobviousness, and Disclosure

Peter Lee
UC Davis School of Law
ptrlee@ucdavis.edu
November 15, 2023

AI as an Inventing Tool

- What is entailed in invention? And how can AI help?
  - Conceive of a new invention, reduce to practice, etc.
  - Search the prior art
    - Substantive learning (perhaps obtaining training data)
    - Ensure the patentability of any invention
- AI tools to search the prior art
  - E.g., Patent Quality Artificial Intelligence, patsnap, CAS StNext

- PTO is using AI to search prior art in examination
  - Over 1.3 million searches using AI tools

Novelty

- Concerns that AI will lead to a proliferation of prior art, thus making novelty more difficult to satisfy
  - AI tools to find prior art
  - Users of generative AI may unwittingly create more prior art

  - AI deliberately creating prior art to defeat patents
    - "All Prior Art is a project attempting to algorithmically create and publicly publish all possible new prior art, thereby making the published concepts not patent-able."

Novelty

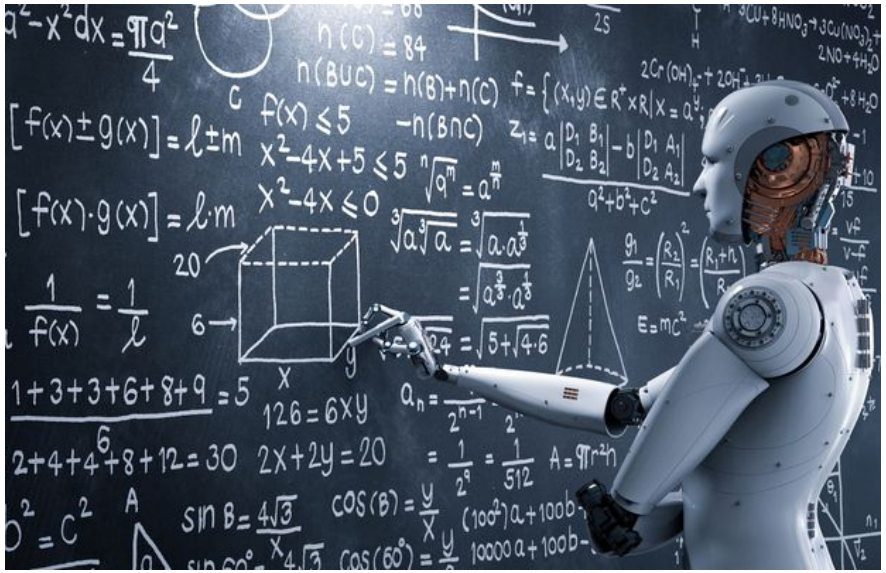
- Legal considerations pushing against the AI-based proliferation of "prior art":
  - Statutory and doctrinal definitions of prior art
    - Must generally be "public"
      - E.g., described in a printed publication, otherwise available to the public
    - "Inventions" stored in DeepMind's corporate databases likely not prior art
  - Identity standard for anticipation
  - Enablement standard for anticipation
    - An AI-generated image or brief description of an invention may not be an enabling prior art reference

Nonobviousness

- AI likely to make nonobviousness more difficult to satisfy
- The *Graham* framework for nonobviousness
  - 1) Scope and content of the prior art
    - More prior art, more accessible prior art
    - PHOSITA is charged with knowledge of all pertinent prior art
    - Narrowing (elimination?) of the analogous arts limitation
      - 1) From the same field of endeavor as the claimed invention
      - 2) Reasonably pertinent to the particular technical problem
      - ML pattern recognition expands the set of pertinent prior art

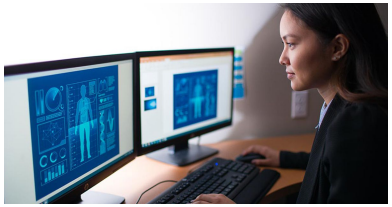
Nonobviousness

- The *Graham* framework
  - 2) Differences between the prior art and the claims at issue
    - Arguably, AI increases the gap between the prior art and the claims needed to satisfy nonobviousness



Nonobviousness

- The *Graham* framework
  - 3) Level of ordinary skill in the art
    - Types of problems, prior art solutions, rapidity of innovation, sophistication of technology, educational level
    - Suggestions for modifying the level of ordinary skill analysis
      - Human-centered: person having ordinary skill in AI
        - "Skill" refers to user's framing of the problem, selection and control of ML and data, adjustments
      - Humans augmented by AI: PHOSITA facilitated by AI
        - Analogy to PHOSITAs using search engines
      - AI centered: AI skilled in the art, Inventive Machine Standard



Nonobviousness

- The *Graham* framework
  - Secondary considerations
    - Commercial success, satisfaction of long felt needs, failure of others, etc.
  - May increase in importance with AI-assisted invention
  - An economic/pragmatic vs. cognitive approach to nonobviousness

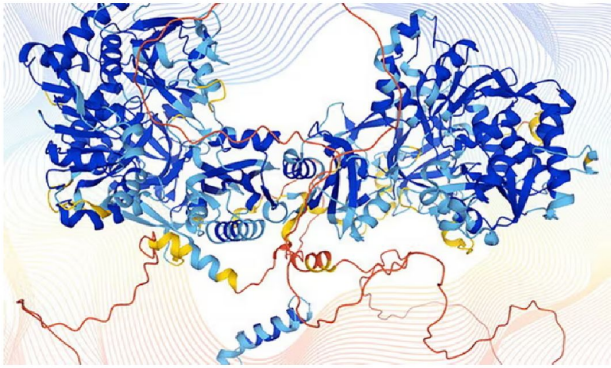
OCTOBER 31, 2022 | 9 MIN READ

One of the Biggest Problems in Biology Has Finally Been Solved

Google DeepMind CEO Demis Hassabis explains how its AlphaFold AI program predicted the 3-D structure of every known protein

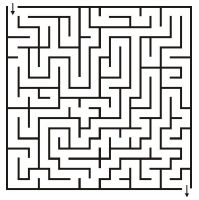
Team behind AI program AlphaFold win Lasker science prize

Award for work on shapes of proteins raises prospect of AI research earning a Nobel for first time



Subtests of Nonobviousness

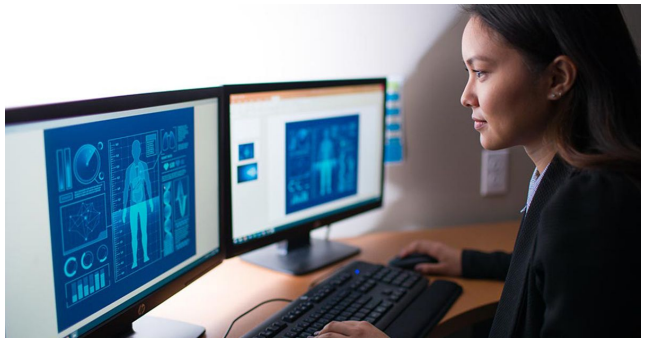
- AI and "obvious to try"
  - KSR v. Teleflex (2006): obvious to try may be obvious
    - Trying a finite number of predictable solutions with a reasonable expectation of success is likely obvious



  - But some "obvious to try" inventions are still <u>non</u>obvious
    - 1) Varying all parameters where the prior art provides no guidance or direction
      - How someone frames a problem, selects a model may be nonobvious
    - 2) Exploring a new technology where the prior art gives only general guidance regarding the form of the claimed invention
      - Some AI-assisted inventions are obvious to try yet nonobvious

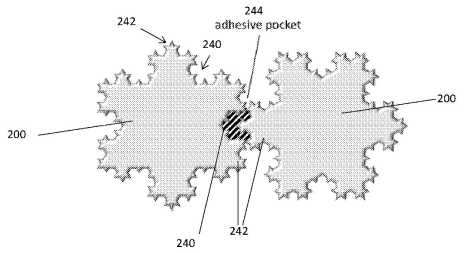
Enablement and Written Description

- Enablement and written description are also measured relative to the PHOSITA
  - All things being equal, if level of ordinary skill increases:
    - Harder to establish nonobviousness
    - Easier to enable and describe



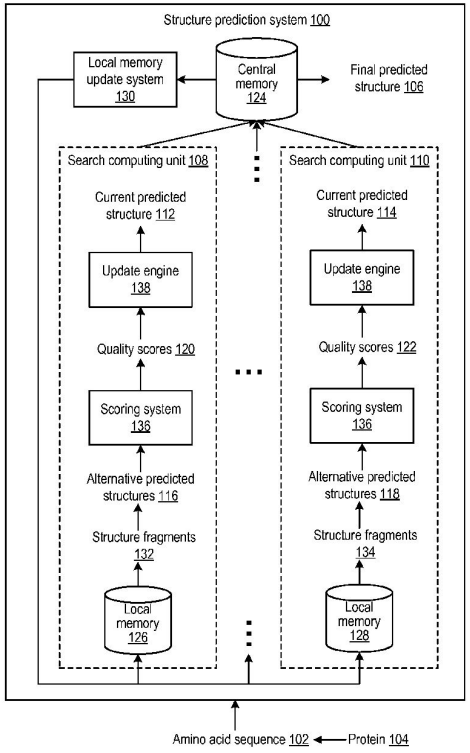
Enablement and Written Description

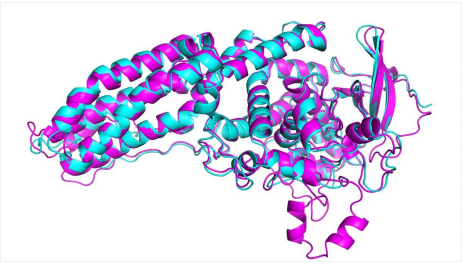
- Distinction between AI-assisted inventions:
  - Do not themselves incorporate an AI model
  - Incorporate an AI model
- Inventions not requiring disclosure of an AI model
  - E.g., Thaler/DABUS:
    - "A food or beverage container comprising: a generally cylindrical wall defining an internal chamber of the container …."
  - No particular disclosure challenges



Enablement and Written Description

- Inventions incorporating an AI model
  - E.g., DeepMind (Machine Learning for Determining Protein Structures):
    - "A method performed by one or more data processing apparatus for determining a final predicted structure of a given protein …."
  - Disclosure is more difficult to satisfy
    - Concerns over the "black-box" nature of ML models
    - Disclosure can include algorithms, flow charts, training data, training procedures
    - Perhaps deposit of model and training data





Theoretical Considerations

- Why do we grant patents?
  - Inducement theory of patentability
- What are patents incentivizing?
  - Traditionally:
    - Invention
  - Post-AI
    - Ex ante problem identification, selection of parameters for models, selection of data
    - [Invention]
    - Ex post development and commercialization

Thanks!