

Patentability of Computer Software

Introduction

- Section 101 lists four categories of patent eligible subject matter: machines, processes, articles of manufacture, compositions of matter
- The courts have long carved out exceptions:
 - Laws of nature (e.g., $F=ma$)
 - Natural phenomena (e.g., gravity, EM radiation)
 - Abstract ideas (e.g., formula, algorithms)

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Examples of ineligible subject matter

- Transitory signals
- Naturally occurring organisms
- Human per se
- A contract between two parties
- A games defined as a set of rules
- Computer program per se
- A company
- Arrangement of printed matter

Recent Supreme Court Cases

- Mayo v. Prometheus (2012)
 - Claims directed to method of giving drug to patient, measuring drug metabolites, and deciding whether to increase/decrease the dosage were not patent eligible
- Assoc. for Molecular Pathology v. Myriad Genetics (2013)
 - Naturally occurring DNA sequences, even when isolated, cannot be patented
- Alice Corp. v. CLS Bank (2014)
 - Claims to an electronic escrow service invalid as abstract idea
 - A generic computer implementation fails to transform abstract idea into patent eligible subject matter

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Method Claim in Alice v. CLS Bank

33. A method of exchanging obligations as between parties, each party holding a credit record and a debit record with an exchange institution, the credit records and debit records for exchange of predetermined obligations, the method comprising the steps of:

- creating a shadow credit record and a shadow debit record for each stakeholder party to be held independently by a supervisory institution from the exchange institutions;
- obtaining from each exchange institution a start-of-day balance for each shadow credit record and shadow debit record;
- for every transaction resulting in an exchange obligation, the supervisory institution adjusting each respective party's shadow credit record or shadow debit record, allowing only these transactions that do not result in the value of the shadow debit record being less than the value of the shadow credit record at any time, each said adjustment taking place in chronological order; and
- at the end-of-day, the supervisory institution instructing ones of the exchange institutions to exchange credits or debits to the credit record and debit record of the respective parties in accordance with the adjustments of the said permitted transactions, the credits and debits being irrevocable, time invariant obligations placed on the exchange institutions.

Apparatus claim in Alice v. CLS Bank

1. A data processing system to enable the exchange of an obligation between parties, the system comprising:

- a data storage unit having stored therein information about a shadow credit record and shadow debit record for a party, independent from a credit record and debit record maintained by an exchange institution; and
- a computer, coupled to said data storage unit, that is configured to (a) receive a transaction; (b) electronically adjust said shadow credit record and/or said shadow debit record in order to effect an exchange obligation arising from said transaction, allowing only those transactions that do not result in a value of said shadow debit record being less than a value of said shadow credit record; and (c) generate an instruction to said exchange institution at the end of a period of time to adjust said credit record and/or said debit record in accordance with the adjustment of said shadow credit record and/or said shadow debit record, wherein said instruction being an irrevocable, time invariant obligation placed on said exchange institution.

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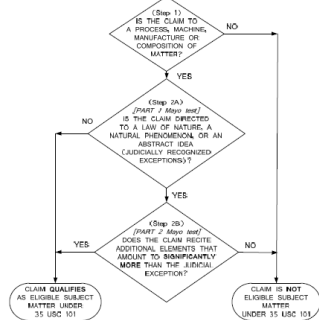
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The Mayo-Alice Test



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Mayo-Alice Test in Words

1. Is the claim is to a process, machine, article of manufacture, or composition of matter?
 - If not, the claim is ineligible
2. If so, is the claim is directed to a judicial exception?
 - If not, the claim is eligible
3. If so, does the claim recite *significantly more* than the abstract idea?
 1. If so, the claim is eligible
 2. If not, the claim is ineligible

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Examples of Significantly More

- Improvements to another technology or field
- Improvements to the functioning of the computer itself
- Applying the judicial exception with a particular machine
- Transforming/reducing a particular article to a different state
- Adding limitations beyond what is well-understood, routine, and conventional

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Significantly More

- Quote from Alice v. CLS Bank:

We have described step two of this analysis as a search for an “inventive concept”—*i.e.*, an element or combination of elements that is “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.”

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CLS v. Alice Discussion

- Concern with “preemption”
- What does it mean for a claim to add “significantly more”?
- What is an “inventive concept”?
- How do we judge an improvement?
- Evidentiary concerns
- Infuses the question of subject matter eligibility with an inventiveness test

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Eligible or not?

1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising:
 - providing said computer with a data base for said press including at least, natural logarithm conversion data (ln), the activation energy constant (C) unique to each batch of said compound being molded, and a constant (x) dependent upon the geometry of the particular mold of the press,
 - initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,
 - constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding,
 - constantly providing the computer with the temperature (Z), repetitively calculating in the computer, at frequent intervals during each cure, the Arrhenius equation for reaction time during the cure, which is $\ln v = CZ+x$, where v is the total required cure time,
 - repetitively comparing in the computer at said frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and
 - opening the press automatically when a said comparison indicates equivalence.

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Eligible or not?

1. A method for updating the value of at least one alarm limit on at least one process variable involved in a process comprising the catalytic chemical conversion of hydrocarbons wherein said alarm limit has a current value of B_0+K wherein B_0 is the current alarm base and K is a predetermined alarm offset which comprises:

- (1) Determining the present value of said process variable, said present value being defined as PVL ;
- (2) Determining a new alarm base B_1 , using the following equation: $B_1=B_0(1.0-F) + PVL(F)$ where F is a predetermined number greater than zero and less than 1.0;
- (3) Determining an updated alarm limit which is defined as B_1+GK ; and thereafter;
- (4) Adjusting said alarm limit to said updated alarm limit value.

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Eligible or not?

1. A method for the halftoning of gray scale images by utilizing a pixel-by-pixel comparison of the image against a blue noise mask in which the blue noise mask is comprised of a random non-deterministic, non-white noise single valued function which is designed to produce visually pleasing dot profiles when thresholded at any level of said gray scale images.

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Eligible or not?

10. A method of generating a device profile that describes properties of a device in a digital image reproduction system for capturing, transforming or rendering an image, said method comprising:

- generating first data for describing a device dependent transformation of color information content of the image to a device independent color space through use of measured chromatic stimuli and device response characteristic functions;
- generating second data for describing a device dependent transformation of spatial information content of the image in said device independent color space through use of spatial stimuli and device response characteristic functions; and
- combining said first and second data into the device profile.

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