# Machine-Generated Patent Documents

*Presented to* WIPO Conversation on IP & Frontier Technologies
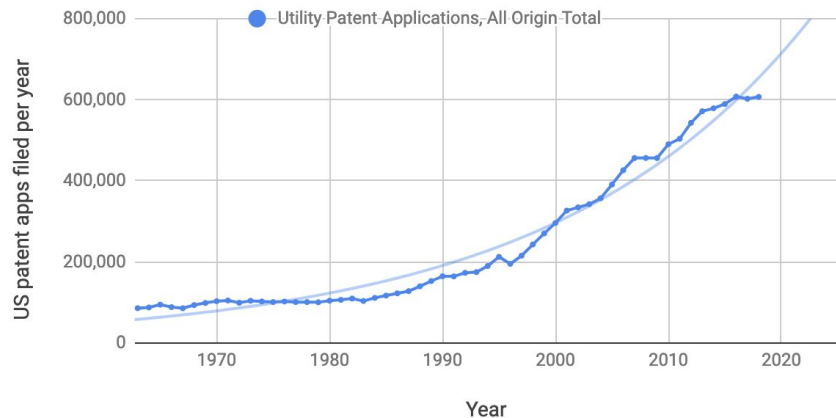
*on* April 6th, 2022

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# Growing Demand for Patent Services

- Over the last decade:
  - 31% increase → total patent applications filed per year (2008-2018)
  - 40% increase → total substantive official actions mailed per year (2007-2017)
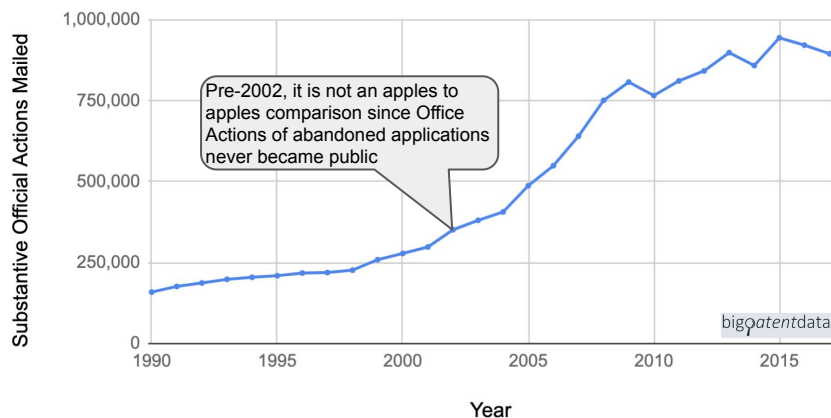


US patent filings versus Moore's Law
Annual patent filings leveling off or set to increase drastically?



Substantive Official Actions Mailed per Year
Practitioner demand at all-time highs

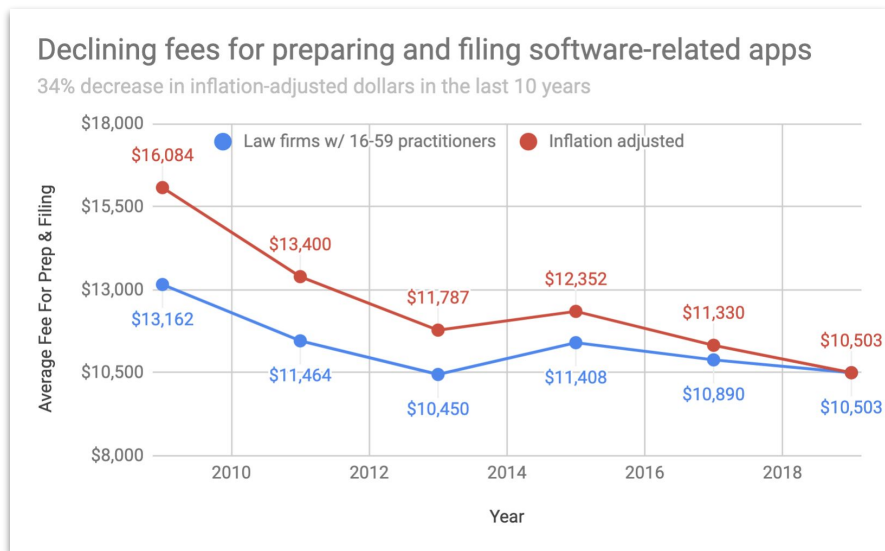Pre-2002, it is not an apples to apples comparison since Office Actions of abandoned applications never became public

# Changing Demographics Within the Patent Bar

- <u>Patent bar admissions have largely collapsed</u> over the last decade
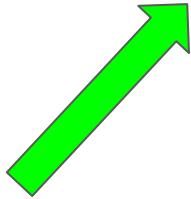


Active Practitioners by Years of Practice

# Challenging Economics for Prep & Pros

- Decade-long decline in market-rate fees for patent services
  - 34% decrease → inflation-adjusted average fees to prep and file a software app
  - Is this a trend that will continue?

## Declining fees for preparing and filing software-related apps
34% decrease in inflation-adjusted dollars in the last 10 years

| | Law firms w/ 16-59 practitioners | Inflation adjusted |
|---|---|---|

$16,084

$13,400

$11,787

$12,352

$11,330

$10,503

$13,162

$11,464

$10,450

$11,408

$10,890

$10,503

Average Fee For Prep & Filing

$18,000 · $15,500 · $13,000 · $10,500 · $8,000

2010   2012   2014   2016   2018

Year

# Economic Non-Equilibrium Driving Innovation

**Demand**

**Supply**

**Price**

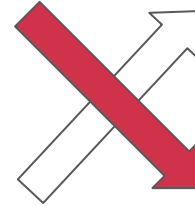**Measured by annual filings**
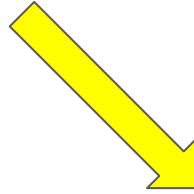
**Measured by # of practitioners**

**Measured by average fees**

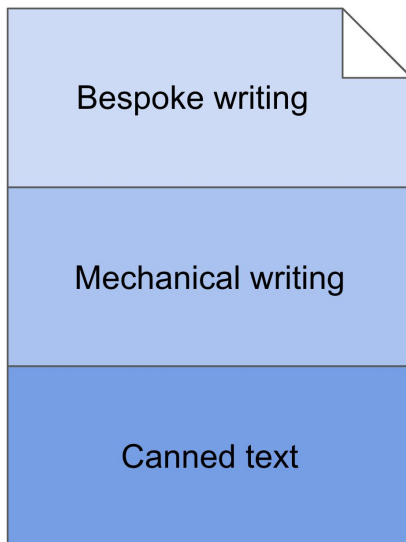Can NLP/NLG help bring market closer to equilibrium?

To what extent can computers generate patent docs?

What does this mean for attorneys and consumers?

# **Content Types** in Legal Documents

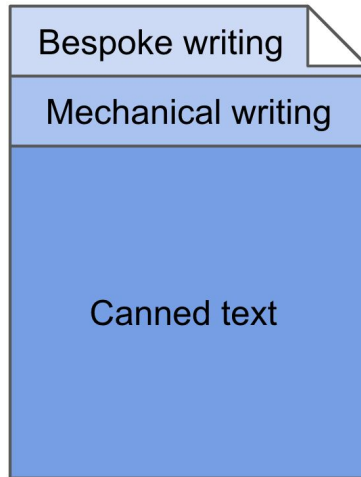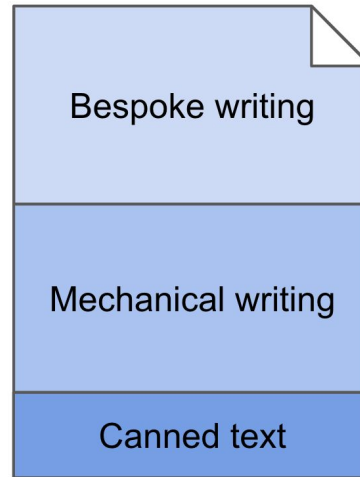- Decompose legal documents based on "type of content"

Legal Document:

# Different Legal Docs Have Different Content Ratios

- Type of content determines approach for document automation

| Contract | Brief | Memorandum |
|----------|-------|------------|
| Bespoke writing | Bespoke writing | Bespoke writing |
| Mechanical writing | Mechanical writing | Mechanical writing |
| Canned text | Canned text | Canned text |

# **Example**: Patent Application Documents

Patent Document:

- Patent claims
- Problem/solution statement
- Description of key concepts & nuances of the invention
- Background section

**Bespoke writing**

**Mechanical writing**

- Title, field of invention, summary, literal claim support in detailed description, additional claim sets mirroring attorney-written claims, abstract, method flow charts
- Completing blanks in canned text
- Lists of well-known examples
- Dictionary definitions
- Description of well-known facts

- Boilerplate
- Stock figure descriptions
- Stock definitions section

**Canned text**

# **Example**: Patent Application Documents (SOTA)

Human written; unique for each patent doc

- Patent claims
- Problem/solution statement
- Description of key concepts & nuances of the invention
- Background section

Written once by human and manually reused across multiple patent docs

- Boilerplate
- Stock figure descriptions
- Stock definitions section

Patent Document:

**Bespoke writing**

**Mechanical writing**

**Canned text**

Automatically generated "claim support" based on human-written claims (requires cursory human review)

- Title, field of invention, summary, literal claim support in detailed description, additional claim sets mirroring attorney-written claims, abstract, method flow charts
- Completing blanks in canned text
- Lists of well-known examples
- Dictionary definitions
- Description of well-known facts

Manually extracted and/or written

**Document assembly**: partially automated w/ human review

# **What's Next**: Bespoke Writing Content

Legal Document:

| |
|---|
| Bespoke writing |
| Mechanical writing |
| Canned text |
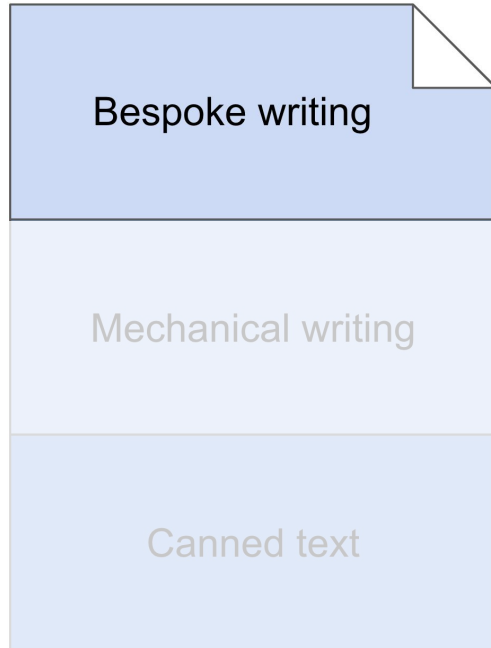
- **Accelerate human ability** to write & edit bespoke content
  - **Predictive text**, e.g., suggested sentence completions
  - **Dynamic documents**, e.g., when term is changed and same change propagates through entire document or if a figure element is renumbered/renamed, corresponding changes are made throughout the document

# **What's Next**: Mechanical Writing Content

Legal Document:

Bespoke writing

Mechanical writing

Canned text
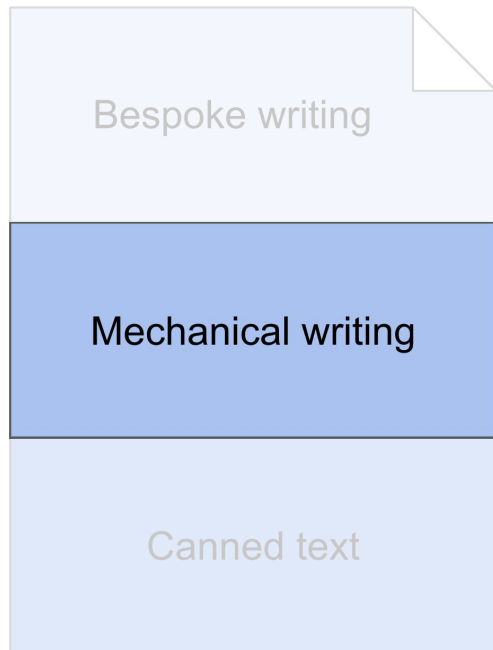
- **More documents** will be identified for mechanical writing automation
  - High value, high volume, substantial mechanical writing involved

- **Improve readability** of auto-generated mechanical writing content
  - **Enhance transduction** of input language
  - **Increase variety** in surface realization

# **What's Next**: Canned Text Content

Legal Document:

Bespoke writing

Mechanical writing
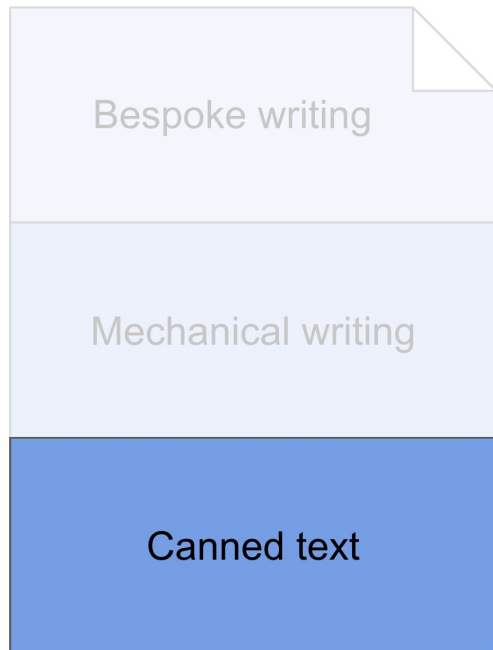
Canned text

- ● **Add automation** to canned text utilization
  - ○ **Automate extraction** of boilerplate and other reused content
  - ○ **Automate suggestion or selection** of appropriate boilerplate
  - ○ **Language sync / doc assembly**, i.e., putting the pieces together in a beautifully formatted document with self-consistent language

# Expectations

**For high-value / high-volume patent documents:**

1. Absent general AI, automation will not displace attorneys in patent document preparation

2. The highest value "bespoke" writing will remain the purview of skilled patent attorneys

3. Rote & mundane parts of patent drafting are being automated away (and they won't be missed)

# Impact of Auto-Drafted Patent Documents

**For Attorneys:**

1. <u>Better job satisfaction</u>: More time spent on interesting work and less on dull work

2. <u>Better value to clients</u>: More time in budget to spend on analysis and bespoke writing

3. <u>Better value to law firms</u>: Each attorney can process more work in less time w/o sacrificing quality

**For Consumers:**

1. <u>Improved accessibility</u>: Lower document costs means more consumers can use patent services

2. <u>Improved quality</u>: Automation acts as guardrails reducing human errors in work product

3. <u>Faster turnaround</u>: Legal services can keep up with the pace of their clients' businesses

# THANK YOU - QUESTIONS - CONTACT INFO

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