Artificial Intelligence Technology Mapping

Pamplin Technology Fellowship

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Introduction

Project Background

What Are Patents?

- Legal protections granted to inventors for intellectual property
- Prevents others from making, using, selling or importing inventions without permission
- Granted by agencies like USPTO
- Exclusive rights for a specified period (20 years is standard)

Importance of Patents

- Protect intellectual property
- Foster economic growth
- Encourage technological advancement
- Drive competition

02

Problem Space

Patent Ecosystem Challenges

Backlog of Applications

3.6% increase since the COVID-19 Pandemic in 2020; lengthy and time-consuming process in patent offices

Patent Disputes

Conflicts between entities can negatively impact businesses and economy

Concept Map

Disputes across jurisdictions and laws due to globalization

CONOPs

Instances of non-marketable inventions or non-viable products

Enabling Technology

Violation of IP rights and dissemination of inaccurate information due to misuse of emerging technologies like ChatGPT

Patents in IP and R&D Strategies

- **Strategic Gain with Patents**
  - Use patents as protective shields and competitive tools
  - Serve as deterrents and facilitators in market negotiations
- **Mitigating R&D Risks**
  - Patents safeguard company innovations
  - Justify high R&D expenditures

Navigating the Global Patent Landscape

- **Strategic Gain with Patents**
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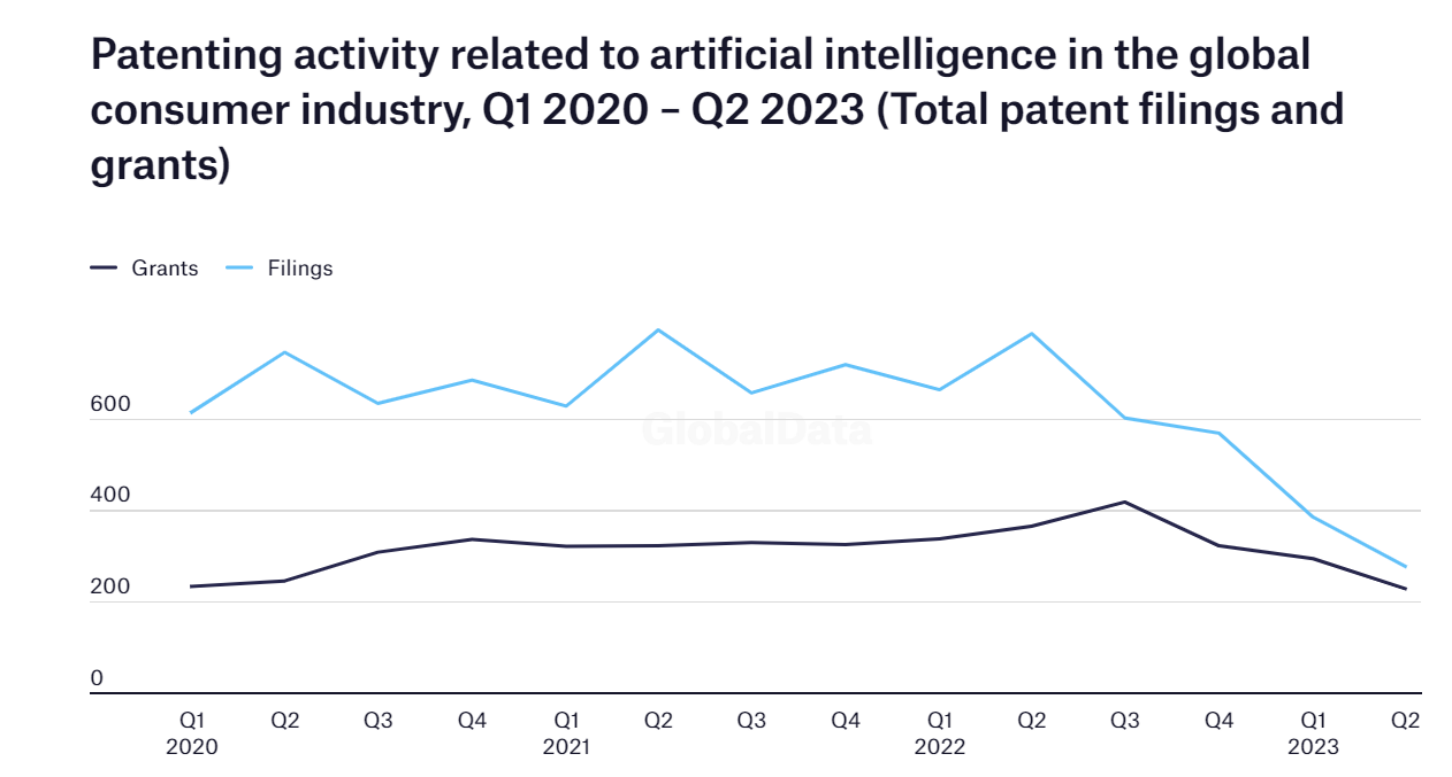
Concept Map

Patent Activity in Decline



Generative AI Solutions

Extracting

Use AI for extracting and presenting relevant patent data

Investigating

Investigate intellectual property and legal domains

Indentifying

Identify licenses, infringers, and potential customers

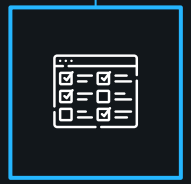
Recognizing

Recognize ChatGPT limitations in accurancy and information quality

Patent Data Analysis Challenges

Bounding Constraints

Navigating technical information and legal documents while ensuring quality patents without broad claims or disputes



Intelligence & Language Barriers

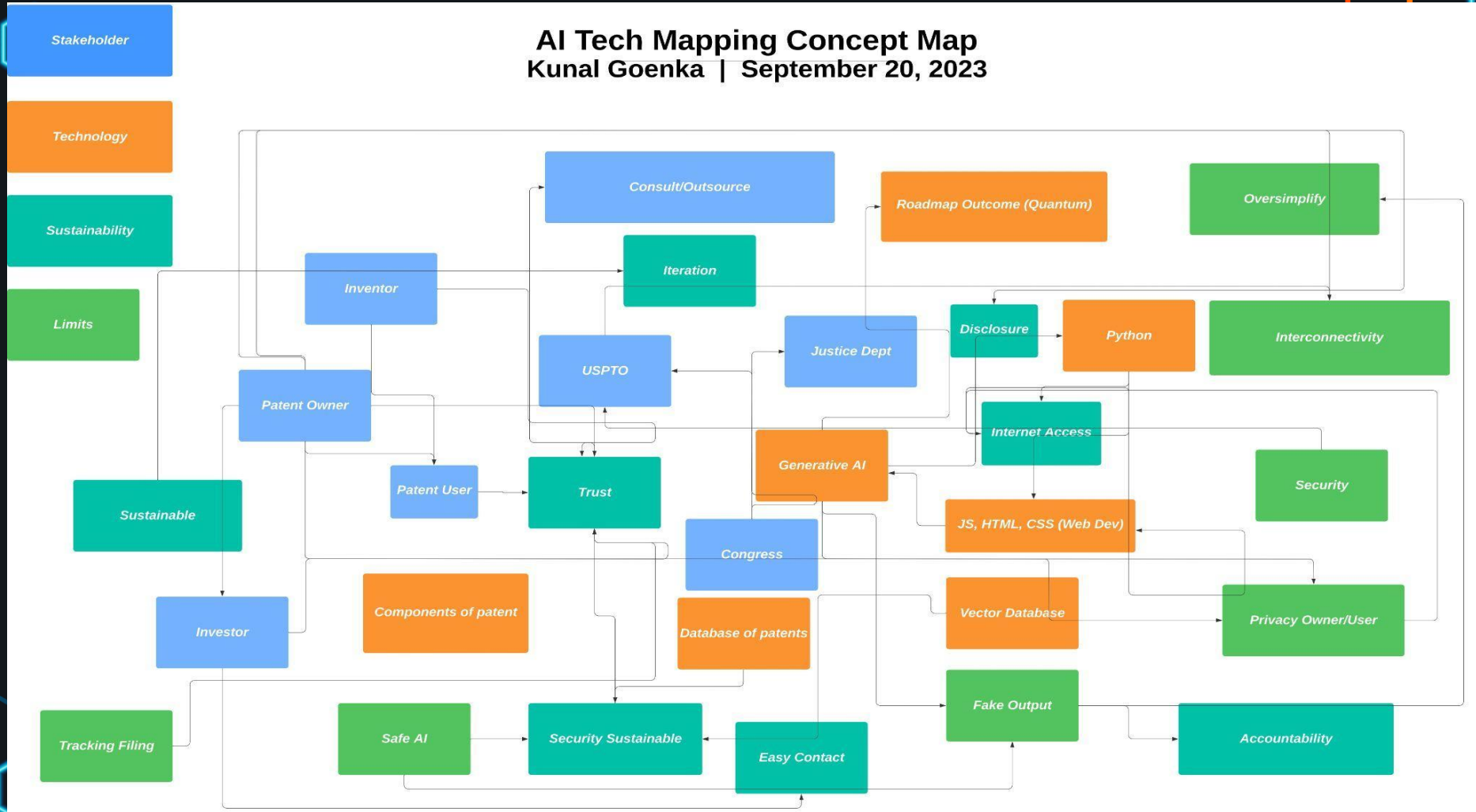
Track competitor patents to decipher innovation strategies; patents often have technical and legal jargon, posing a challenge

Classification & International Considerations

Patents categorized into classes/subclasses; International operations entail navigating varying patent systems and laws

AI Tech Mapping Concept Map

Kunal Goenka | September 20, 2023



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CONOPs

AI Tech Mapping CONOPs

Hudson Aikins | September 27, 2023

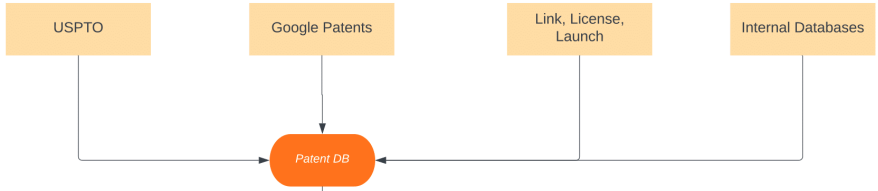
Stakeholders

- User: The User can be a Company, Team, Patent Owner, etc. Their major involvement will be throughout the inputs of the system.
- Patent Owner: This person owns the patent and needs to execute the work.

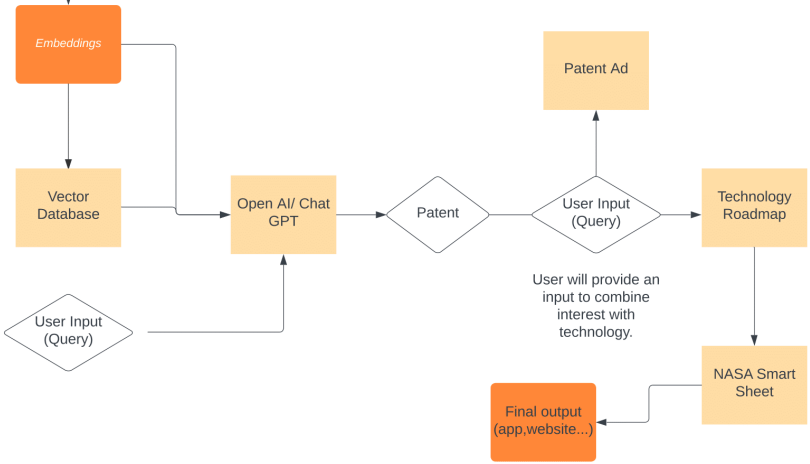
System Requirements

-

Step 1: Gather Patents



Step 2: Process the Data



Step 3: Analyze the Data

Step 4: Result Output

Stakeholders & System Interaction

Companies

- **Strategic Users:** Inform decisions on patent trends, tech advancements, and competition.
- **Multifaceted Interactions:** Engage with system across R&D, legal, and strategic planning.

Product Owners

- **Operational Users:** Ensure non-infringement and explore patent opportunities.
- **Focused Interactions:** Explore patents for specific tech or product categories.

Interaction Dynamics

- **Input & Output:** Stakeholders shape data gathering and analysis; Companies seek broad insights, while Product Owners focus on product specifics.
- **Feedback & System Value:** Engage in feedback loops for refinement; Outcomes and usage inform system enhancements and serve as testimonials.

Challenges & Considerations

Data Integrity

Ensure data accuracy and reliability for decisions

User interface must be intuitive and cater to varied needs

Usability

Customization

Offer tailored output reports for distinct user needs

Use of outcomes can be case studies/testimonials, impacting market position

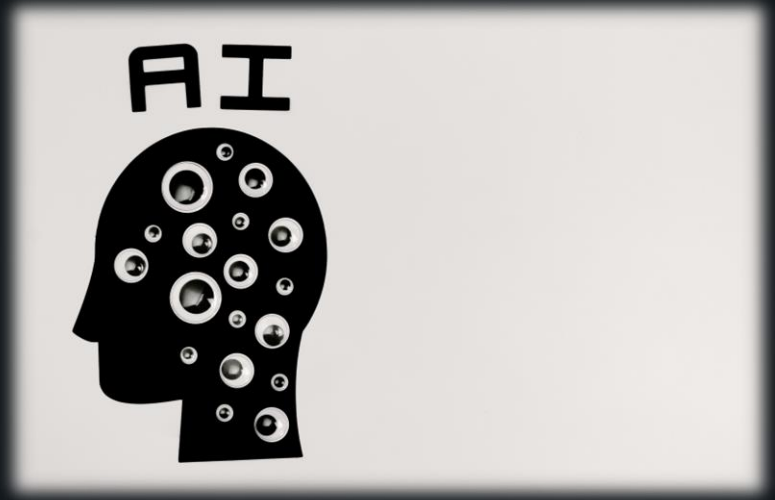
Outcome Applicability

05

Enabling Technology

Introduction to Enabling Technology

- **Artificial Intelligence (AI):**
  - Creating systems that mimic human intelligence tasks
- **Natural Language Processing (NLP):**
  - AI subfield that enables computers to interact with human language
- **Primary Use:**
  - Simplifying and explaining patents



Applications of AI in Patents

Automate Patent Analysis

Extract key concepts, claims, and prior art

Generate Summaries

Plain-language summaries of patent documents

Provide Context

Explain legal and technical terms

Prior Art Search

Efficiently identify relevant prior patents

Interactive UI

AI-driven tools to understand complex patent info

Outcomes From Using AI Technology

Accessibility & Efficiency

Simplified patent info; reduced research time/cost

Enhanced Decision-Making

Informed decisions on filing, licensing, and litigation

Innovation Boost

Promotes knowledge sharing and new inventors' entry

Streamlined Processing

Reduces patent application backlogs

Potential Gaps & Barriers

Data Quality & Complexity

Reliance on high-quality training data and patent intricacy.

Legal & Ethical Challenges

Adherence to standards and automation concerns

Adoption Resistance

Skepticism and job displacement fears

Global Variability

Adapting to diverse patent systems/languages

Security & Privacy

Protecting sensitive patent data

Cost & Accessibility

High implementation costs; ensuring universal access

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Conclusion

Corporate strategies

Areas for improvement

Innovators have expressed frustration with multiple areas of the patent filing process. Most talked about the 22 month waiting time as their biggest frustration

How AI could help

Creating a "database" of all current patents will allow for more clarity when trying to file and could cut back on the amount that get some kind of rejection

Why patents?

The patent filing process has yet to be changed or

Thank You!

Any Questions?