DECENTRALIZED INTELLECTUAL PROPERTY (IP) PROTECTION PLATFORM WITH AI-POWERED SIMILARITY DETECTION

A Comprehensive Intellectual property protection system approach

PRESENTED BY
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Agenda

1. Introduction
2. Problem Statement
3. Research Problem
4. System Overview Diagram
5. Individual Components
6. Requirements

WHAT IS INTELLECTUAL PROPERTY?

INTRODUCTION

- The platform addresses critical challenges in securing creative and innovative works amidst the increasing digitalization of intellectual property.
- Traditional systems, relying on **centralized** databases and **manual** processes, often fail to scale globally, adapt to evolving infringement tactics, or ensure robust security.
- Our platform revolutionizes IP protection by integrating **blockchain** and **AI/ML** technologies to create a secure, decentralized ecosystem for registering, managing, and safeguarding intellectual property.

PROBLEM STATEMENT

Traditional IP protection systems are inadequate in addressing global plagiarism, unauthorized usage, and scalability challenges, necessitating a **decentralized** and **automated** solution for robust IP security

RESEARCH PROBLEM

What are the primary challenges in ensuring secure and tamper-proof intellectual property (IP) protection in a digitalized world?

How can blockchain technology be leveraged to provide decentralized and transparent IP registration and transactions?

What are the most effective AI/ML strategies for detecting IP similarities in text, images, videos, and audio?

How can continuous learning mechanisms improve the adaptability of infringement detection systems?

What are the implications of integrating decentralized IP protection platforms into global legal and compliance frameworks?

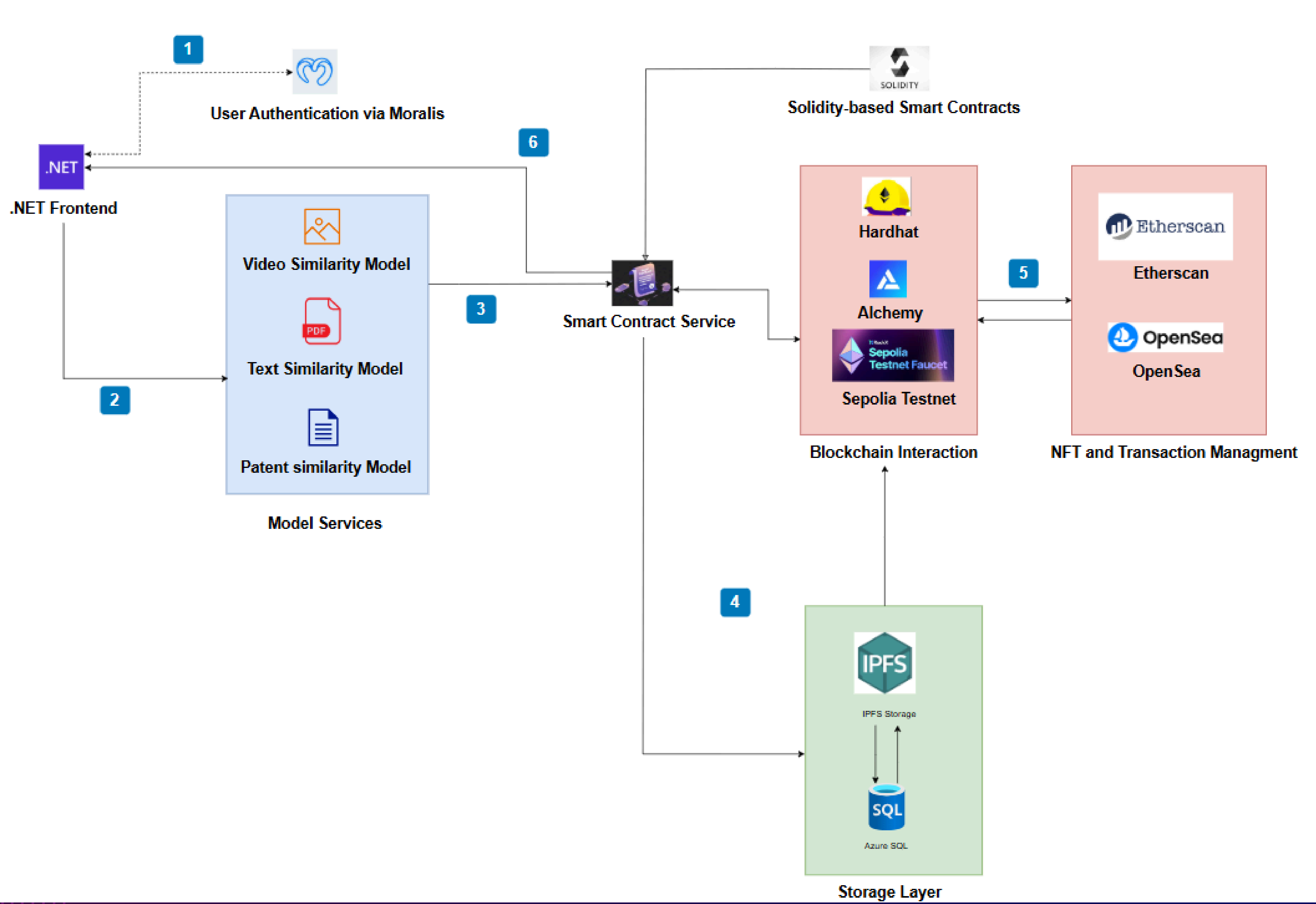
How can a combination of blockchain and AI foster innovation while reducing IP-related disputes?

MAIN OBJECTIVES

To develop a decentralized platform leveraging blockchain and AI/ML technologies for robust intellectual property (IP) protection, aimed at addressing the challenges of plagiarism, unauthorized usage, and IP similarities. The system focuses on providing:

- Secure and Tamper-Proof IP Registration using blockchain with immutable timestamps and smart contracts for ownership and licensing.
- Real-Time Infringement Detection powered by AI/ML to identify similarities in text, images, videos, and audio.
- Continuous Learning Pipelines for improving adaptability and accuracy in detecting evolving infringement tactics.
- Seamless Integration with Global Legal Standards to ensure compliance and support for dispute resolution.
- Innovation Facilitation through advanced semantic search for related patents and contextually connected IPs.

SYSTEM OVERVIEW DIAGRAM



1. The **.NET Frontend** interacts with **Moralis** to authenticate the user and verify their blockchain wallet. This ensures secure access and validates the user before proceeding with any actions, such as IP registration or similarity checks.
2. Data from the **Video Similarity Model**, **Text Similarity Model**, and **Patent Similarity Model** is sent to the **Smart Contract Service**. These models provide similarity scores or infringement detection results to confirm that the submitted intellectual property (IP) does not conflict with existing IPs.
3. The **Smart Contract Service** processes the similarity results, hashes the IP data, and prepares it for interaction with the blockchain. This ensures the integrity and immutability of the data being registered.
4. The **IPFS** stores large data files, such as images, documents, or videos, while the **Azure SQL Database** stores metadata and structured information. Links to the stored data are passed to the **Blockchain Interaction Layer**, ensuring traceability and immutability.
5. The **Blockchain Interaction Layer** communicates with **Etherscan** for monitoring transaction statuses and **OpenSea** for NFT management. This step facilitates the creation of NFTs linked to registered IPs and their availability on a marketplace.
6. Outputs from the system, such as registered IP records, transaction statuses, and minted NFT details, are reflected back to the **.NET Frontend**. Users can view, manage, and interact with their IPs and NFTs through the interface.

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COMPONENT 1 - INTEGRATE BLOCKCHAIN FRAMEWORK AND LEGAL MARKETPLACE

BACKGROUND OF THE STUDY

Securing Intellectual Property in the Digital Era

1. Rapid digitalization has increased IP infringement risks (e.g., plagiarism, unauthorized usage).
2. Traditional centralized systems face challenges like tampering, inefficiency, and scalability issues.
3. Blockchain and AI technologies offer tamper-proof, decentralized, and scalable solutions.
4. The platform integrates smart contracts, NFTs, and real-time AI detection to safeguard IPs effectively.

RESEARCH GAP

Limitations of Existing Systems

1. Lack of real-time similarity detection for infringement prevention.
2. Centralized systems prone to tampering and data manipulation.
3. Minimal integration of blockchain with AI for advanced functionality.
4. Inefficiencies in contextual discovery of related patents.
5. Usability issues for non-technical stakeholders.

RESEARCH PROBLEM

How can intellectual property be securely registered and managed in a decentralized manner?

How to implement real-time infringement detection and contextual discovery using advanced technologies?

How to ensure scalability and usability for a diverse user base?

PROPOSED SOLUTION

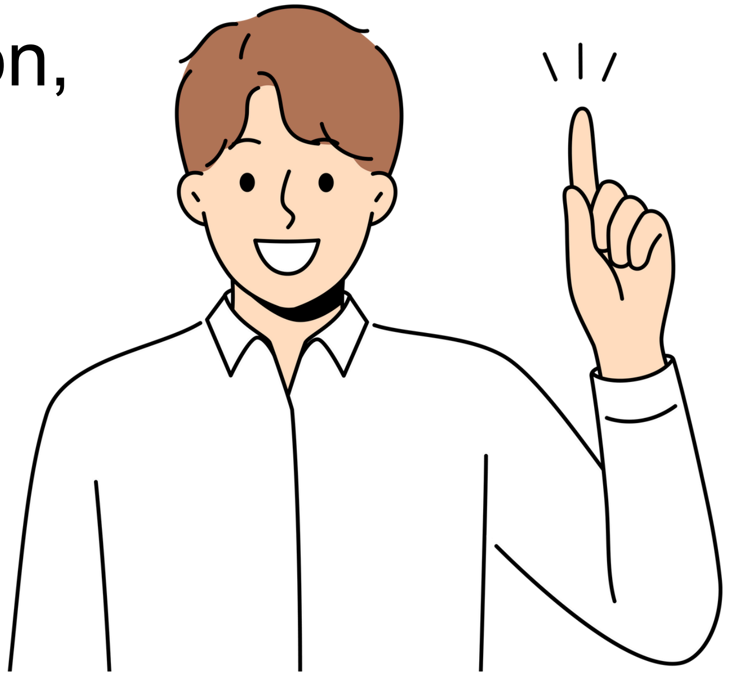
Decentralized IP Protection Platform

- Combines blockchain and AI for secure IP registration, ownership verification, and licensing.

- Converts IP assets into NFTs for traceability.

- Integrates tools like MetaMask for wallet operations, Moralis for authentication, and OpenSea for NFT management.

- AI/ML models for real-time infringement detection of text, images, and multimedia.



NOVELTY

Innovative Features of the Platform

- Blockchain-based tamper-proof proof of ownership using smart contracts.
- Real-time adaptive AI for infringement detection.
- Semantic search algorithms for contextual patent discovery.
- Tokenization of IPs into NFTs for transparent ownership and licensing.

OBJECTIVES OF THE STUDY

Key Goals

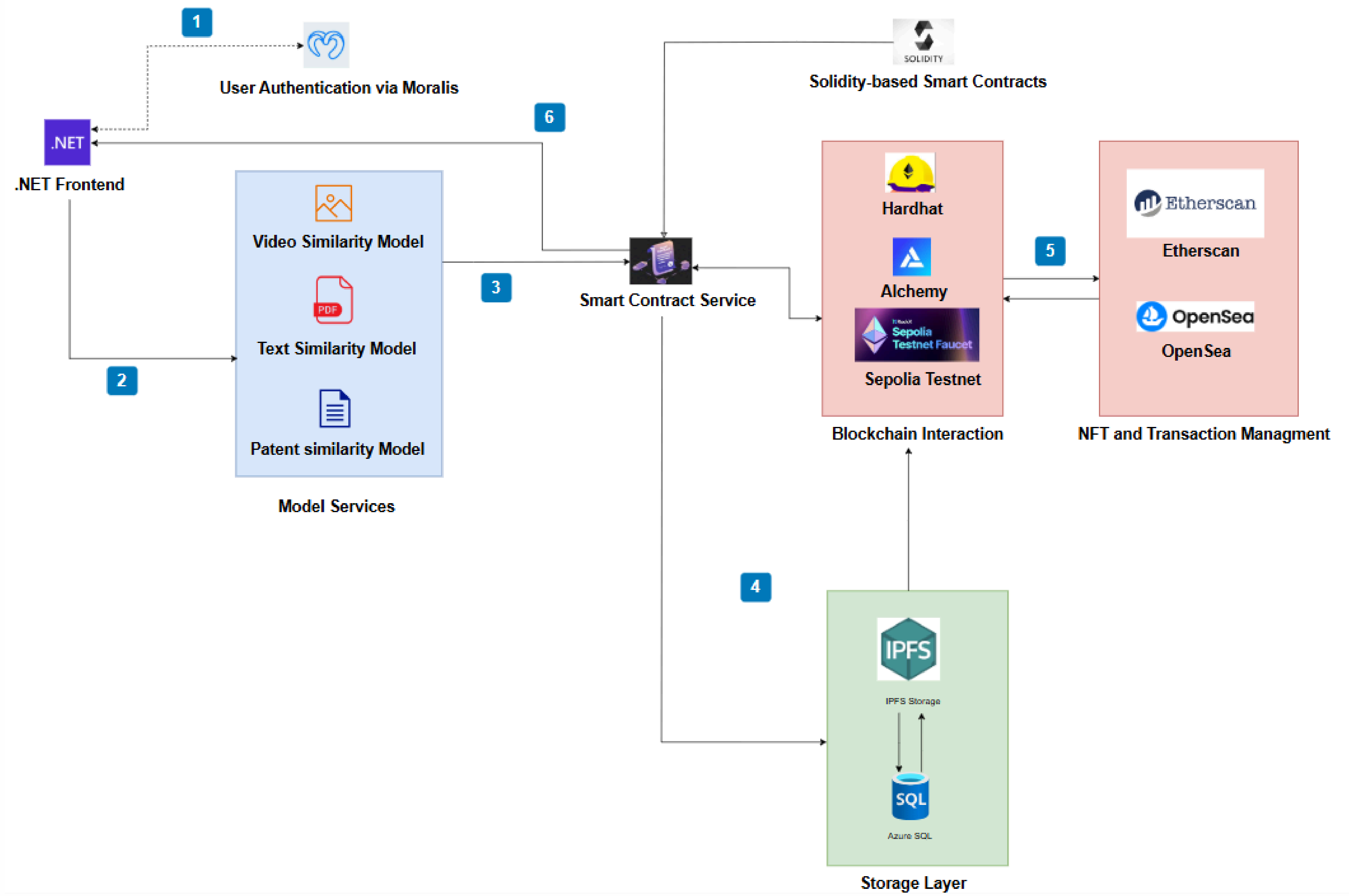
1. Develop a decentralized, scalable platform for robust IP protection.
2. Implement real-time infringement detection through AI/ML models.
3. Automate licensing and ownership verification with smart contracts.
4. Ensure usability and accessibility for all stakeholders.

TECHNOLOGIES AND ALGORITHMS

Technology Stack

1. Blockchain: Hardhat, Solidity, OpenZeppelin.
2. Authentication: Moralis, MetaMask.
3. NFT Management: OpenSea, IPFS.
4. Monitoring: Etherscan, CoinMarketCap.
5. AI/ML: Models for text, image, and multimedia similarity detection.

COMPONENT DIAGRAM



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EXPECTED OUTCOMES

Impact of the Platform

1. Tamper-proof IP ownership and registration.
2. Automated licensing and traceable transactions via NFTs.
3. Real-time detection and prevention of IP infringement.
4. Scalability and accessibility for diverse global users.

REFERENCES

[1] C. Hu, Y. Lu, and M. Wu, “Is Your AI Truly Yours? Leveraging Blockchain for Copyrights, Provenance, and Lineage,” 2024. [Online]. Available: https://arxiv.org/abs/2404.06077.

[2] X. Zhao, L. Wang, and T. Zhang, “Tokenized Model: A Blockchain-Empowered Decentralized Model Ownership Verification Platform,” 2023. [Online]. Available: https://arxiv.org/abs/2312.00048.

[[3] Y. Liu, C. Zhou, and J. Chen, “Blockchain-Empowered Lifecycle Management for AI-Generated Content (AIGC) Products in Edge Networks,” 2023. [Online]. Available: https://arxiv.org/abs/2303.02836.

[4] National Intellectual Property Office of Sri Lanka, “Local IP registration processes and legal standards,” 2025. [Online]. Available: http://www.nipo.gov.lk.

[5] WIPO, “Patent Cooperation Treaty (PCT),” 2025. [Online]. Available: https://www.wipo.int/pct/.

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<u>COMPONENT 2</u> - SIMILARITY CHECKING FOR TEXT BASE CONTENTS (BOOKS / NOVELS) AND CONTINUOUS MODEL LEARNING

BACKGROUND OF THE STUDY

- The rapid growth of digital content has amplified risks of plagiarism and intellectual property (IP) infringement.
- Current tools (e.g., Turnitin, Grammarly) focus primarily on academic or superficial text similarities, leaving gaps for detecting creative, paraphrased, or derivative content.
- Protecting creative works like novels and books requires deeper semantic analysis and innovative technologies.
- Combining AI/ML and NLP with adaptive learning can address these gaps effectively.

RESEARCH GAP

	Research 01: Turnitin	Research 02: Grammerly	Research 03: Current Tools	Proposed solution
Paraphrase Identification	✗	✗	✗	✓
Multilingual Limitations	✗	✗	✗	✓
Storyline Analysis	✗	✗	✗	✓
Semantic Similarity Detection	✓	✗	✗	✓
Real-Time Feedback	✗	✓	✗	✓

RESEARCH PROBLEM

How can we create a robust similarity-checking component to identify semantic and contextual similarities in creative text-based content while continuously adapting to new data and leveraging advanced AI/ML and NLP techniques?

PROPOSED SOLUTION

- Semantic and Contextual Analysis
  - Deep thematic understanding using pretrained transformer models (e.g., BERT, RoBERTa).

- Paraphrase Detection
  - Recognize rephrased and rewritten content with Pegasus or T5 models.

- Cross-Language Similarity
  - Use multilingual transformers like mBERT and XLM-R for global content comparison.

- Storyline and Character Analysis
  - Graph-based models (e.g., Neo4j, NetworkX) for creative narrative structure analysis.

- Continuous Model Learning
  - Adaptive AI to improve accuracy using feedback and new data.

NOVELTY

1. Semantic Understanding and Contextual Comparison
   - Deep thematic and narrative structure analysis.
   - Detects rephrased or rewritten content.

2. Deep Paraphrase Detection
   - Identifies highly paraphrased content with the same ideas.
   - Overcomes limitations of existing tools.

3. Cross-Language Similarity Detection
   - Detects similarities in translated works.
   - Ensures global IP protection.

4. Storyline and Character Similarity Detection
   - Analyzes plotlines and character dynamics.
   - Protects creative storytelling.

OBJECTIVES OF THE STUDY

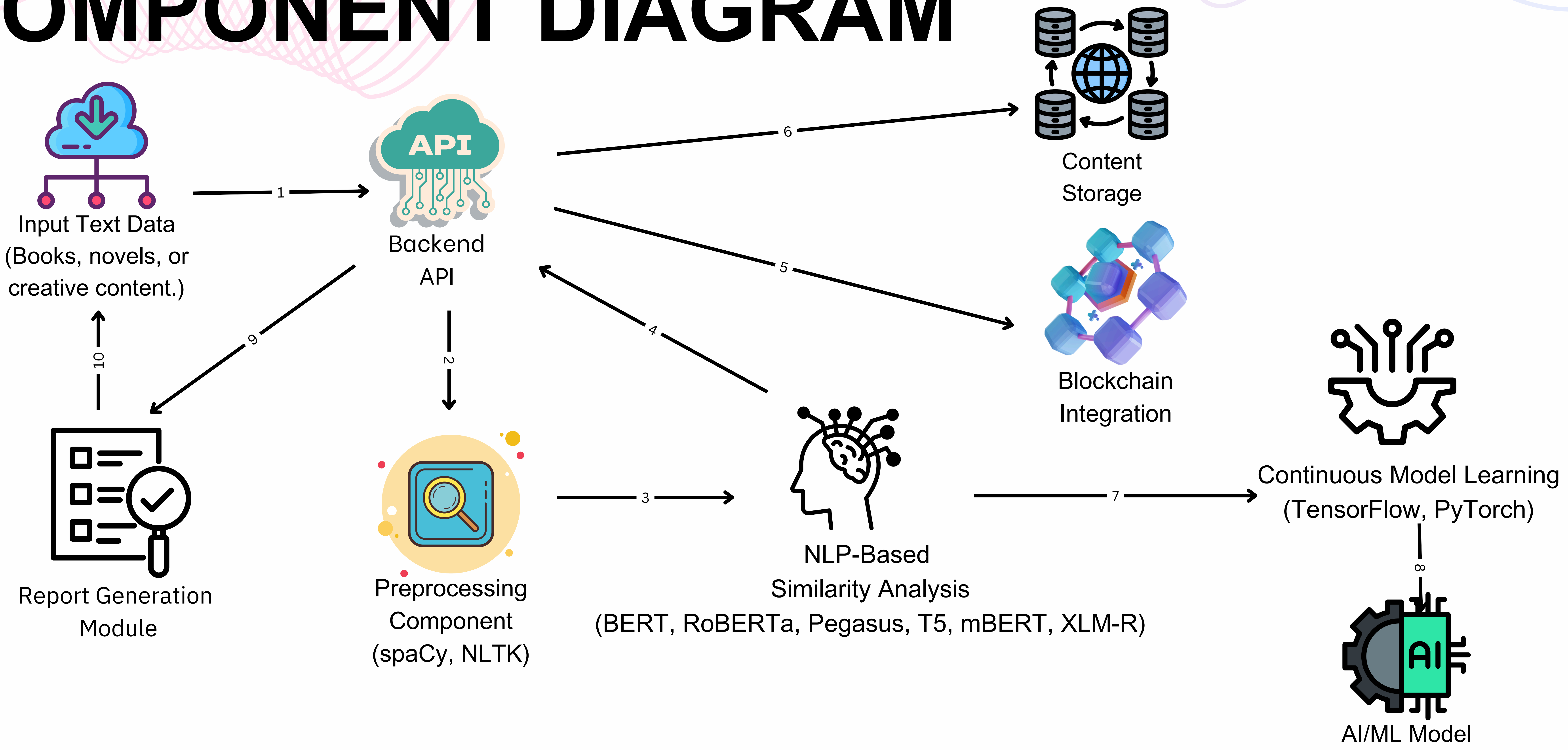
Main Objective

- Develop a robust similarity-checking component for detecting and protecting IP in text-based creative works.

Sub-Objectives

1. Build AI/ML models for semantic and contextual similarity detection.
2. Identify paraphrased and rewritten content.
3. Implement cross-language similarity detection.
4. Analyze creative elements like storylines and character relationships.
5. Ensure continuous model improvement through adaptive learning.

COMPONENT DIAGRAM



FUNCTIONAL REQUIREMENT

- Text Similarity Detection
  - Analyze semantic and contextual similarities.
- Paraphrase Identification
  - Recognize rewritten and disguised content.
- Cross-Language Detection
  - Detect similarities across multiple languages.
- Creative Content Analysis
  - Extract and compare storylines and character relationships.
- Adaptive Learning
  - Continuously improve models using user feedback and new data.
- Real-Time Reporting
  - Generate detailed similarity reports.

TECHNOLOGIES AND ALGORITHMS

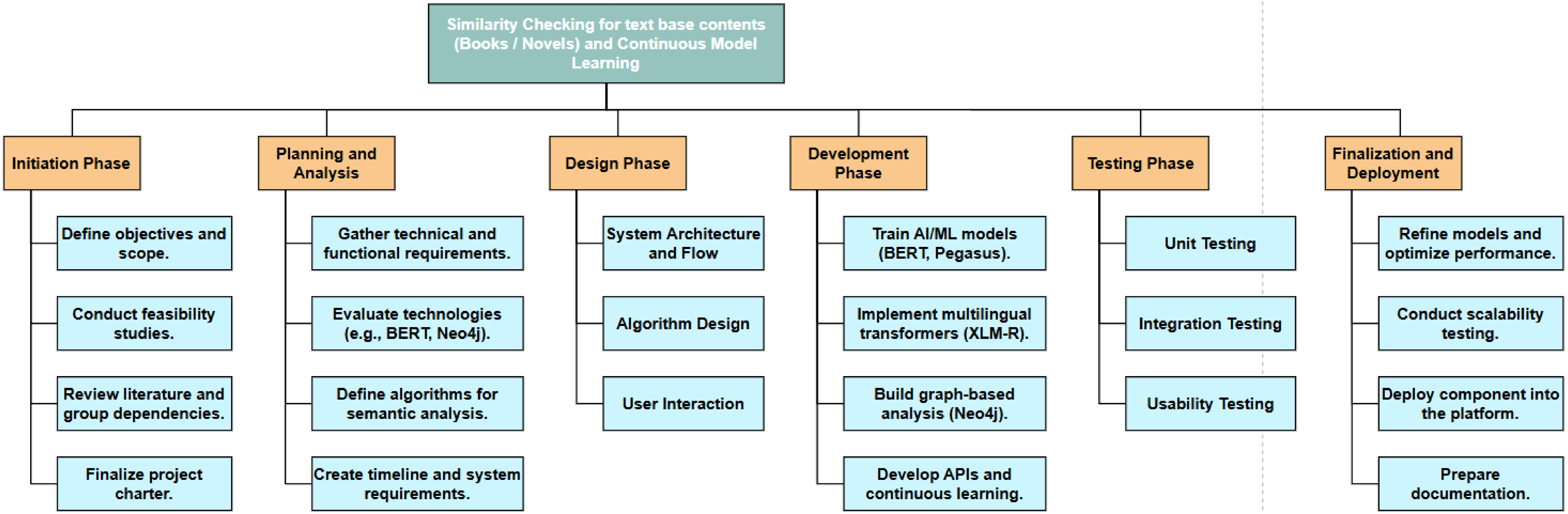
Technologies
- Python for AI/ML development.
- Flask/Django for backend APIs.

Frameworks and Libraries
- Hugging Face Transformers for NLP.
- TensorFlow and PyTorch for deep learning.
- Graph-based libraries: Neo4j, NetworkX.

Algorithms
- Transformer Models: BERT, RoBERTa for semantic similarity and mBERT, XLM-R for cross-language capabilities.
- Paraphrase Detection: Pegasus, T5 for identifying rewritten content.
- Graph-Based Analysis: Neo4j or NetworkX for storyline and character similarity.

NLP Techniques
- spaCy for text preprocessing and entity extraction.
- Sentence-BERT for embedding-based similarity.
- NLTK for natural language processing tasks.

WORK BREAKDOWN STRUCTURE



REFERENCES

[1] A. Vaswani, N. Shazeer, N. Parmar, J. Uszkoreit, L. Jones, A. N. Gomez, Ł. Kaiser, and I. Polosukhin, "Attention is all you need," in Advances in Neural Information Processing Systems, vol. 30, 2017, pp. 5998–6008. Available: https://arxiv.org/abs/1706.03762

[2] J. Devlin, M. W. Chang, K. Lee, and K. Toutanova, "BERT: Pre-training of deep bidirectional transformers for language understanding," in Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2019, pp. 4171–4186. Available: https://arxiv.org/abs/1810.04805

[3] Turnitin, Plagiarism detection tools overview. [Online]. Available: https://www.turnitin.com

[4] S. Nakamoto, "Bitcoin: A peer-to-peer electronic cash system," 2008. [Online]. Available: https://bitcoin.org/bitcoin.pdf

[5] Hugging Face, Documentation: State-of-the-art machine learning models. [Online]. Available: https://huggingface.co/docs

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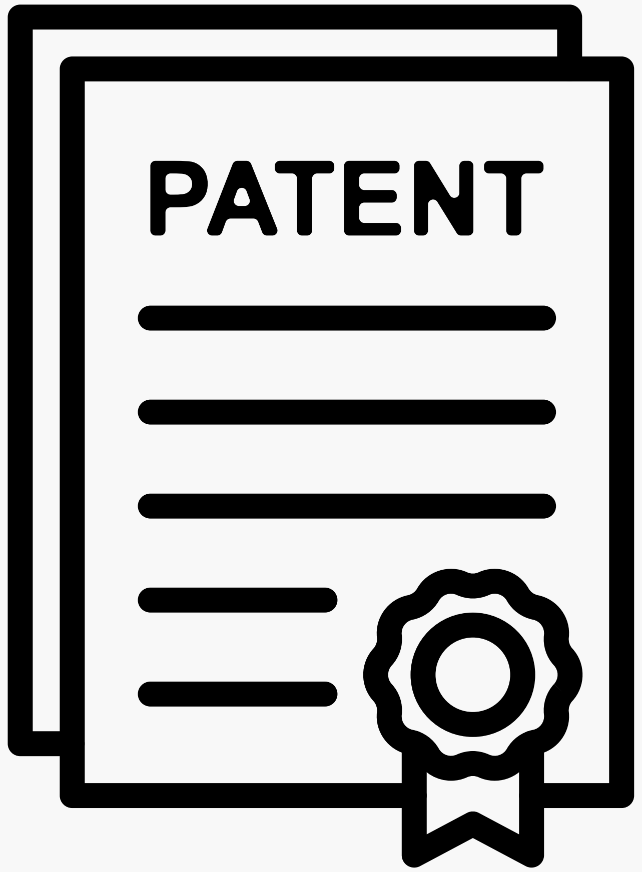
COMPONENT 3 - RELATED PATENT DISCOVERY

Introduction & Background of the study

Traditional systems rely on centralized databases and **keyword** matching, leading to inefficiency, lack of contextual understanding, and limited transparency.



Purpose:
To streamline the discovery of patents related to a submitted idea, enabling innovation and reducing the risk of infringement.

Key Technologies:

- **Blockchain**: Ensures tamper-proof metadata storage and transparent relationships between patents.
- **AI/ML**: Powers **semantic search** for accurate and context-aware patent discovery.

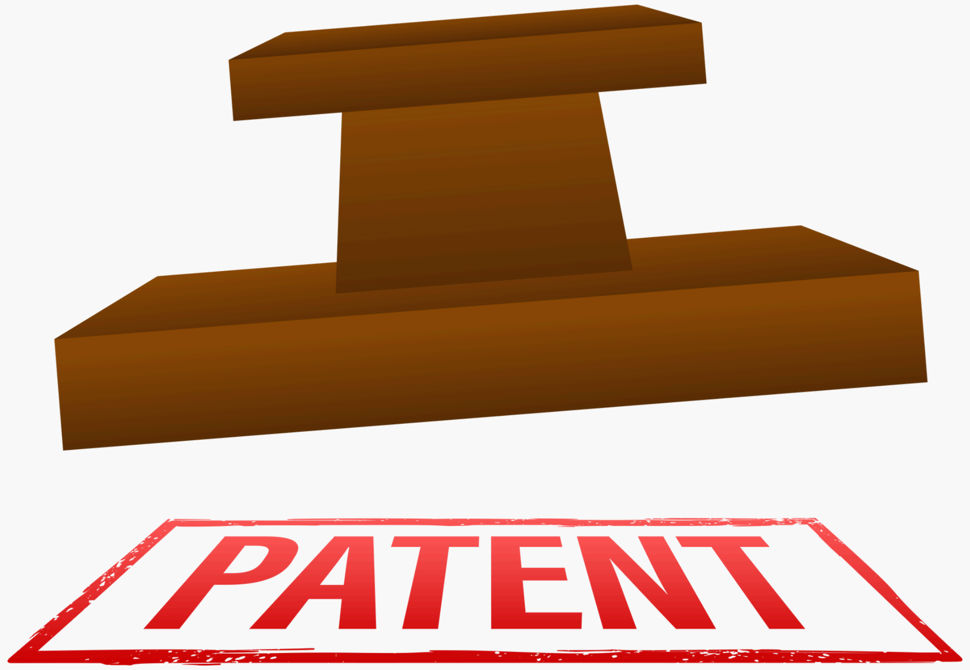
Background of the study

Challenges with Traditional Methods:

1). Time-Consuming: Manual searches are inefficient.

2). Limited Context: Keyword-based systems fail to detect semantic similarities

3). Opaque Methods: Lack of transparency in search results.



Solution Highlights:

1). Semantic search models like NLP and deep learning provide contextual matches.

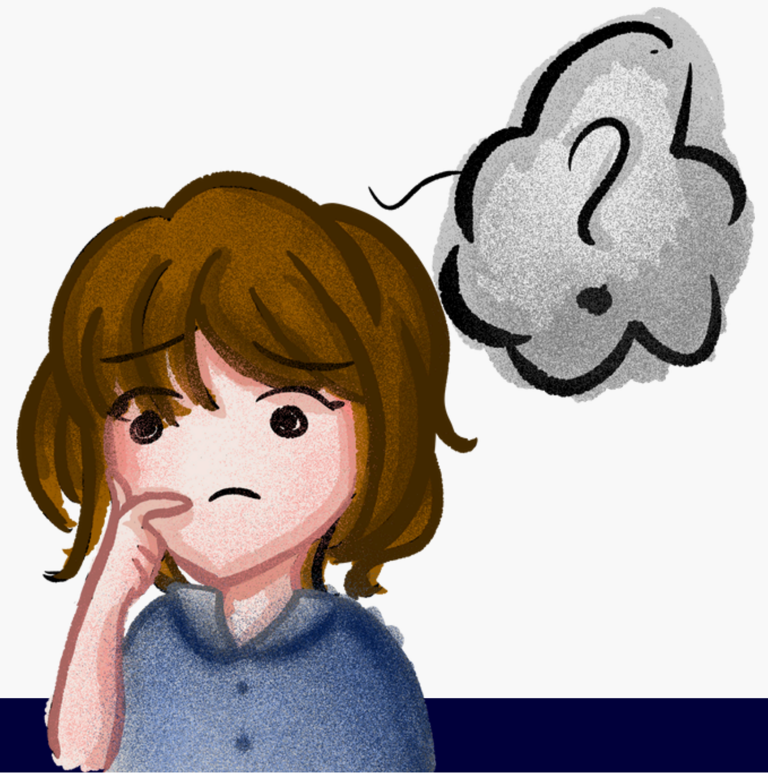
2). Decentralized blockchain-based storage ensures transparency and scalability.

Research gap

	Research 01	Research 02	Research 03	Proposed solution
Semantic Search Algorithms	✗	✓	✗	✓
Blockchain for Metadata	✗	✗	✓	✓
Real-Time Patent Discovery	✗	✗	✗	✓
Contextual Patent Matching	✓	✗	✗	✓
Decentralized Storage	✗	✗	✓	✓

Research Problem

Can a blockchain-powered, AI-driven platform provide real-time, semantic patent discovery to help researchers identify contextually related innovations, reducing redundancy and fostering innovation while ensuring legal compliance?



Proposed Solutions

The Related Patent Discovery system will:

Integrate Blockchain:
Store tamper-proof metadata for patents, ensuring transparency and immutability.

AI-Powered Semantic Search:
Use advanced NLP and deep learning models to identify contextually similar patents.

Decentralized Storage:
Utilize IPFS for efficient and scalable storage of patent-related documents and media.

Real-Time Discovery:
Provide instant insights into related patents using real-time analysis and ranking algorithms.

Objectives

MAIN OBJECTIVE

To develop a decentralized, AI-powered platform for identifying contextually related patents, enabling researchers and innovators to efficiently discover relevant intellectual property, reduce duplication, and foster innovation.

SUB OBJECTIVES

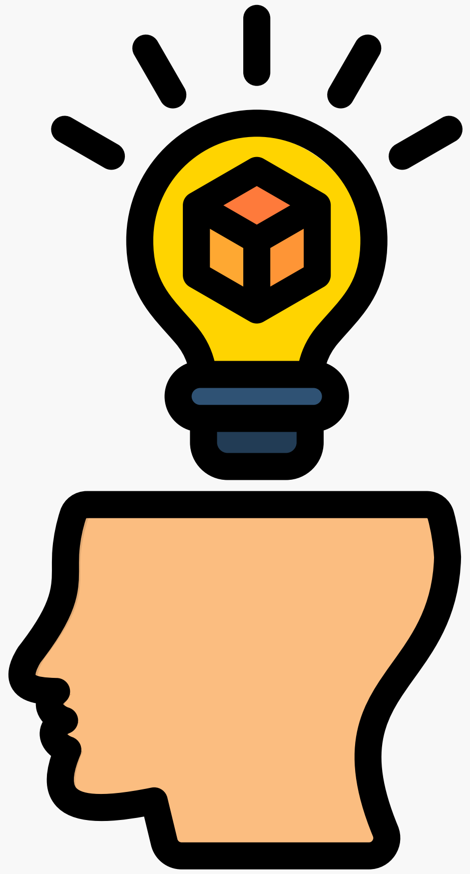
- Implement semantic search algorithms for context-aware patent discovery.
- Use blockchain to ensure transparent and tamper-proof metadata storage.
- Integrate decentralized storage for scalable and efficient document management.
- Develop real-time patent ranking based on relevance and contextual similarity.
- Provide intuitive visualizations to simplify exploration of related patents.

Novelty

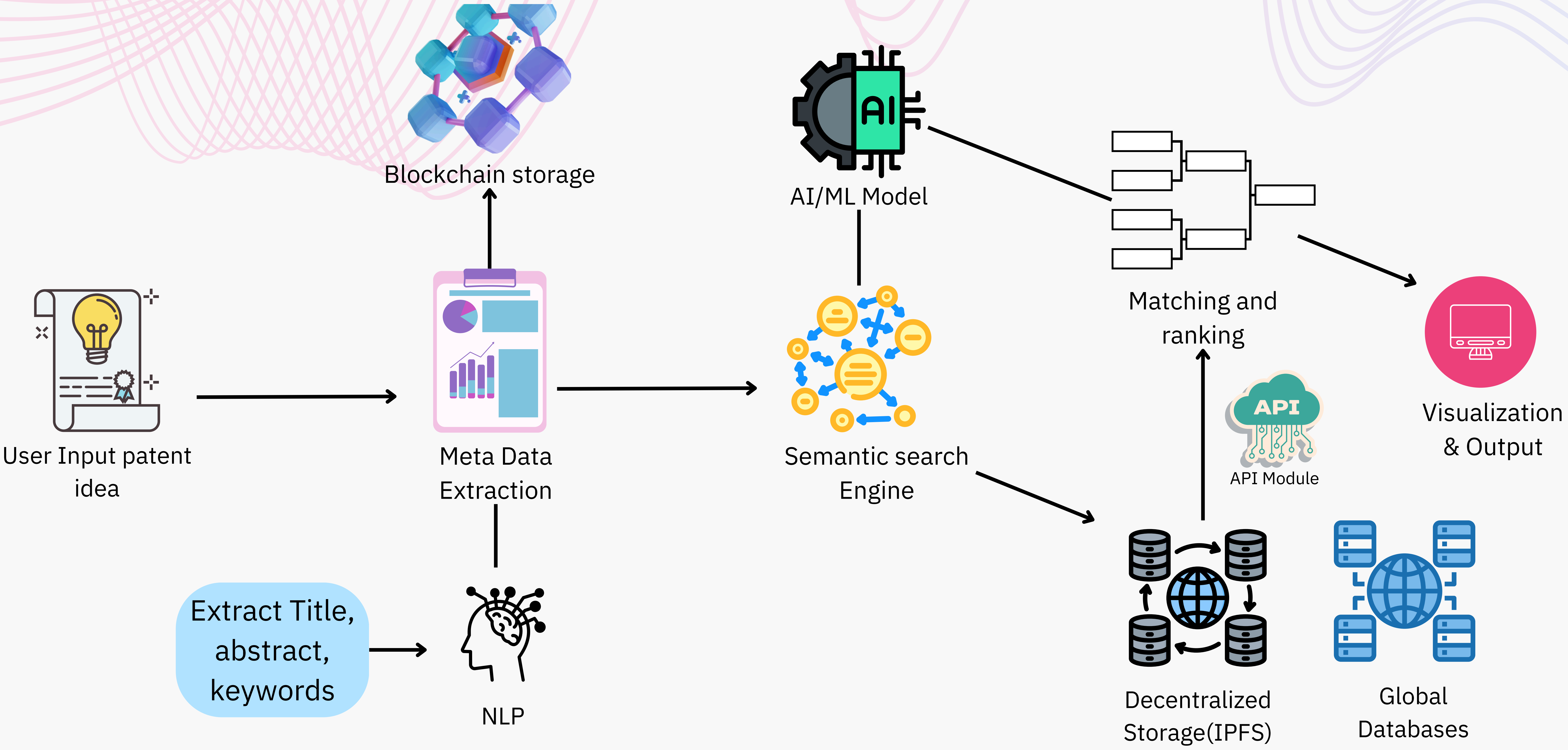
Blockchain-Powered Transparency: Utilizes blockchain to store immutable patent metadata and semantic relationships, ensuring tamper-proof, transparent, and traceable discovery processes.

AI-Driven Semantic Search: Employs advanced AI models (e.g., NLP and deep learning) to perform context-aware patent matching, surpassing traditional keyword-based systems.

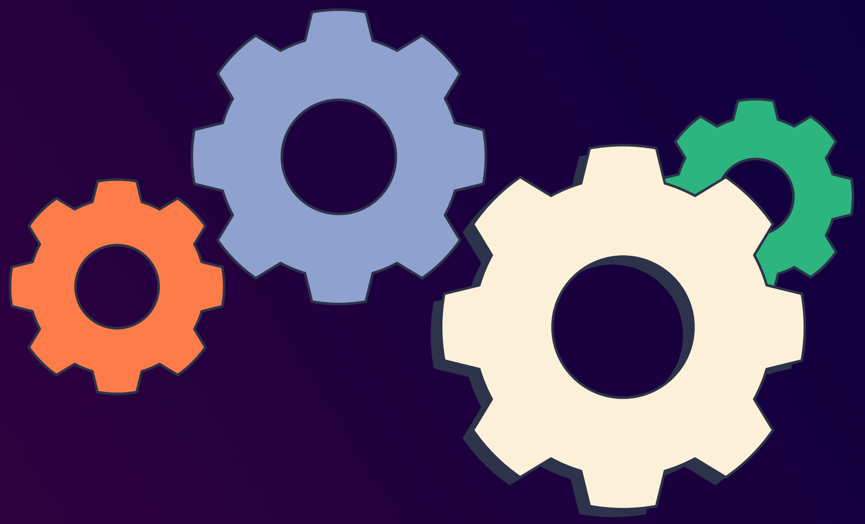
Real-Time and Decentralized Discovery: Combines real-time analysis with decentralized storage (e.g., IPFS) to enable scalable, efficient, and globally accessible patent discovery.



Component Diagram



Functional Requirements



1	Patent Submission and Metadata Extraction:Allow users to submit patent ideas, and automatically extract and structure metadata (e.g., title, abstract, keywords).
2	Blockchain Integration: Store extracted metadata as tamper-proof hashes on the blockchain, ensuring transparency and immutability.
3	Semantic Search and Matching: Use AI-powered semantic search to compare submitted metadata with existing patents for contextual and semantic similarity.
4	Patent Database Access: Fetch and index patent data from global databases (e.g., WIPO, USPTO) and decentralized storage like IPFS for efficient analysis.
5	Real-Time Ranking and Results: Provide real-time results by ranking related patents based on similarity scores and contextual relevance.

Technologies and Algorithm

Technologies

1). Blockchain Framework:

- **Ethereum/Polygon:** For decentralized metadata storage and tamper-proof records.
- **IPFS:** For decentralized storage of patent-related documents.

2). AI/ML Frameworks:

- **TensorFlow:** For developing and deploying semantic search models.
- **Hugging Face Transformers:** For NLP-based semantic analysis.

3). Backend Development:

- **Node.js / Flask:** To handle API requests for patent submissions and search queries.

4). Frontend Development:

- **.NET MVC:** For a user-friendly and interactive visualization of related patents.
- **D3.js / Cytoscape.js**: For semantic graph visualization.

6). Search Engine for Semantic Matching:

- **Elasticsearch or Pinecone:** For fast and scalable vector-based semantic search.

Technologies and Algorithm

Algorithms

1).NLP Model:

- **Sentence-BERT:** For semantic similarity analysis of textual metadata.

2). Deep Learning for Multimedia:

- **Convolutional Neural Networks (CNNs):** For analyzing images or diagrams in patents.

3). Semantic Search:

- **Cosine Similarity:** To rank the relevance of patents based on their embeddings.

4). Hashing for Blockchain:

- **SHA-256:** For creating tamper-proof metadata records.

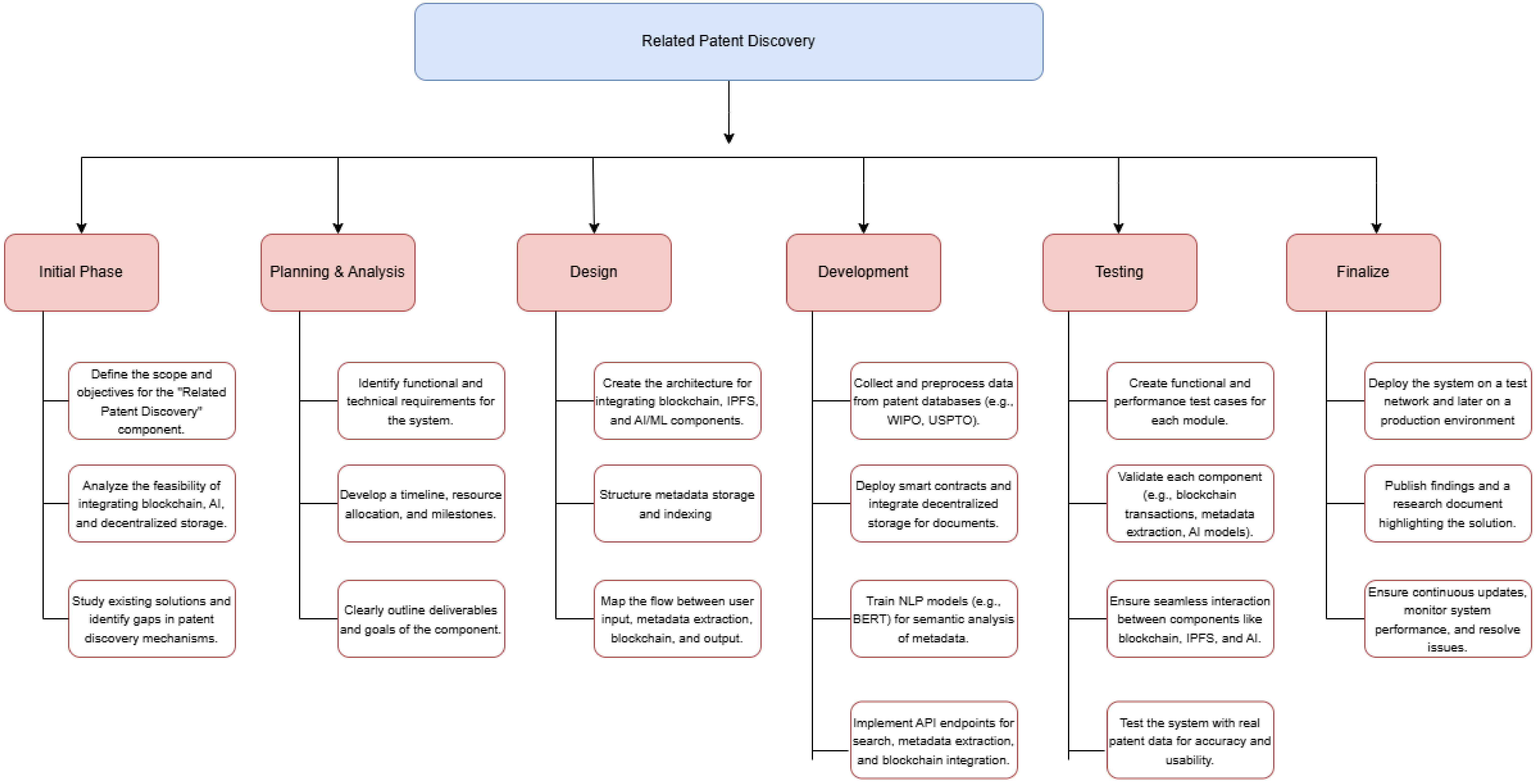
5). Semantic Clustering:

- **K-Means or Hierarchical Clustering:** For grouping similar patents into clusters for easy discovery.

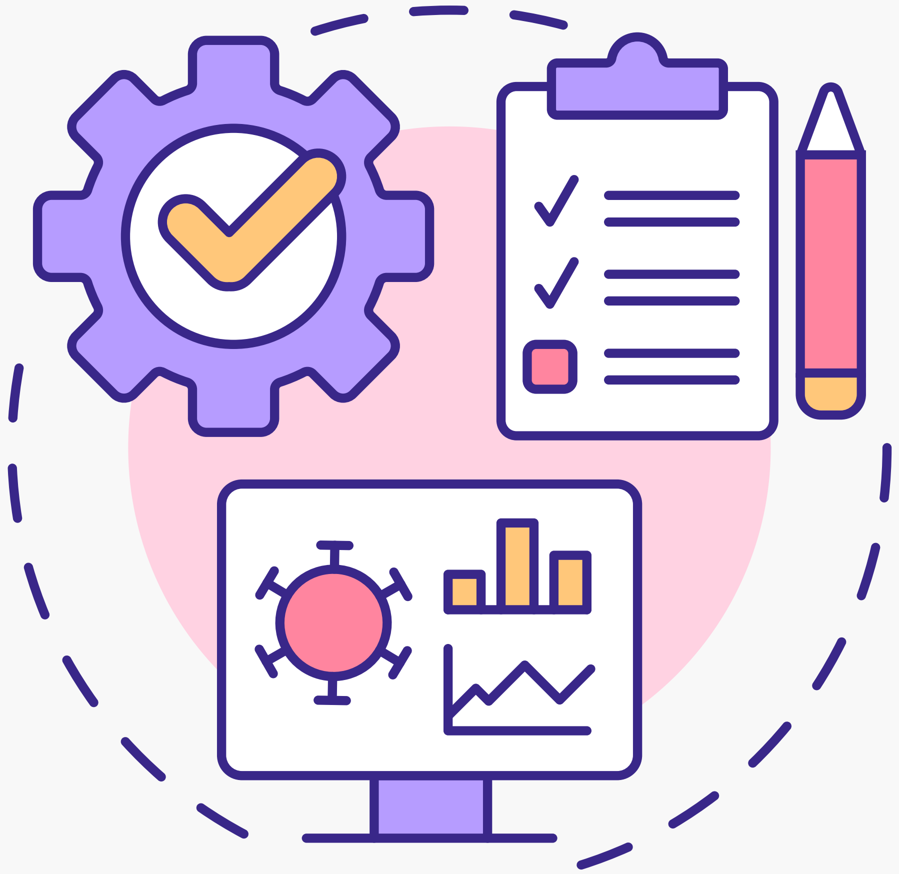
6). Graph-Based Search:

- **Graph Neural Networks (GNNs):** To build and explore semantic relationships between patents.

Work Breakdown Structure



Expected Outcome



- **A** — **Efficient Patent Discovery:** A decentralized platform that enables researchers to discover related patents in real-time, improving innovation and reducing redundancy.
- **B** — **Contextual and Transparent Results:** Accurate semantic matching of patents using AI models, with tamper-proof metadata storage on the blockchain for transparency and traceability.
- **C** — **Enhanced User Experience:** Intuitive visualization tools, such as semantic graphs, to help users explore patent relationships and identify contextual overlaps efficiently.

References

Research Papers and Articles:

[1] A. K. Jain, M. N. Murty, and P. J. Flynn, "Data Clustering: A Review," ACM Computing Surveys, vol. 31, no. 3, pp. 264–323, 1999.

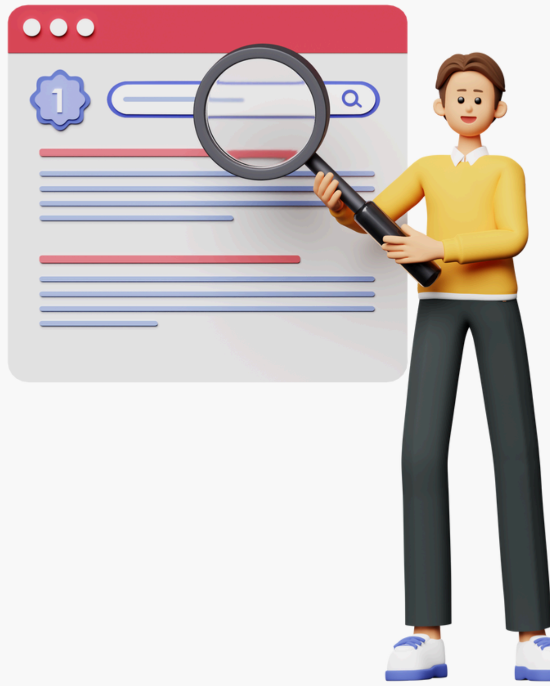
[2] J. Devlin, M. Chang, K. Lee, and K. Toutanova, "BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding," Proceedings of NAACL-HLT 2019, pp. 4171–4186, 2019.

[3] T. Mikolov, K. Chen, G. Corrado, and J. Dean, "Efficient Estimation of Word Representations in Vector Space," Proceedings of ICLR 2013, 2013.

Blockchain and AI Integration:

[1] M. Swan, "Blockchain: Blueprint for a New Economy," O'Reilly Media, 2015.

[2] M. G. Xie, "Blockchain for Intellectual Property Management," International Journal of Blockchain Applications, vol. 4, pp. 23–36, 2018.



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COMPONENT 4 - SIMILARITY CHECKING FOR FIGURE BASE CONTENTS (VIDEOS) AND CONTINUOUS MODEL LEARNING

Background of the study

The digital age increases the unauthorized usage of multimedia (images, videos, audio), and traditional IP protection methods are insufficient for modern infringement tactics.

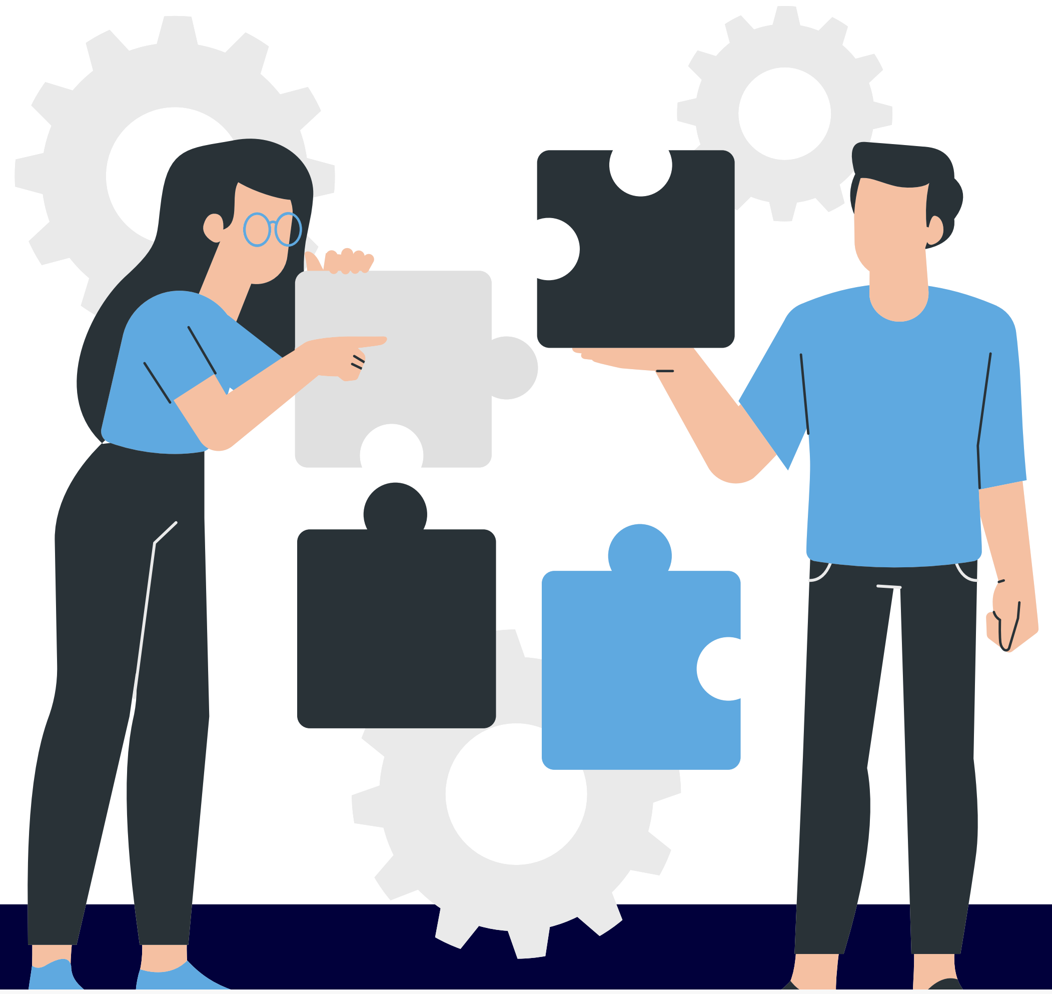
Centralized databases are prone to tampering and limited scalability and manual detection processes are time-consuming

Detecting images, videos, and audio similarities using AI algorithms to identify manipulations, visual patterns, and semantic alterations.

Develop real-time AI-powered models for multimedia similarity detection and integrate APIs for seamless, real-time results.

Research Problem

How can we use AI-powered models to detect video similarities in real time and ensure robust IP protection?



Objectives

Main Objective

Develop a robust multimedia similarity detection system leveraging AI/ML models and blockchain technology to ensure intellectual property protection across multiple formats.

Sub Objectives

- Create an AI models for video similarity detection
- Utilize blockchain to securely record and verify the ownership lifecycle of multimedia content.
- Design APIs that allow seamless interaction with the similarity detection system for external platforms.
- Enable the system to process a variety of video formats.
- Ensure continuous improvement of similarity detection capabilities through adaptive learning mechanisms.

Novelty

Comprehensive Similarity Detection that uses AI/ML models to detect similarities across various multimedia types (images, videos, audio).

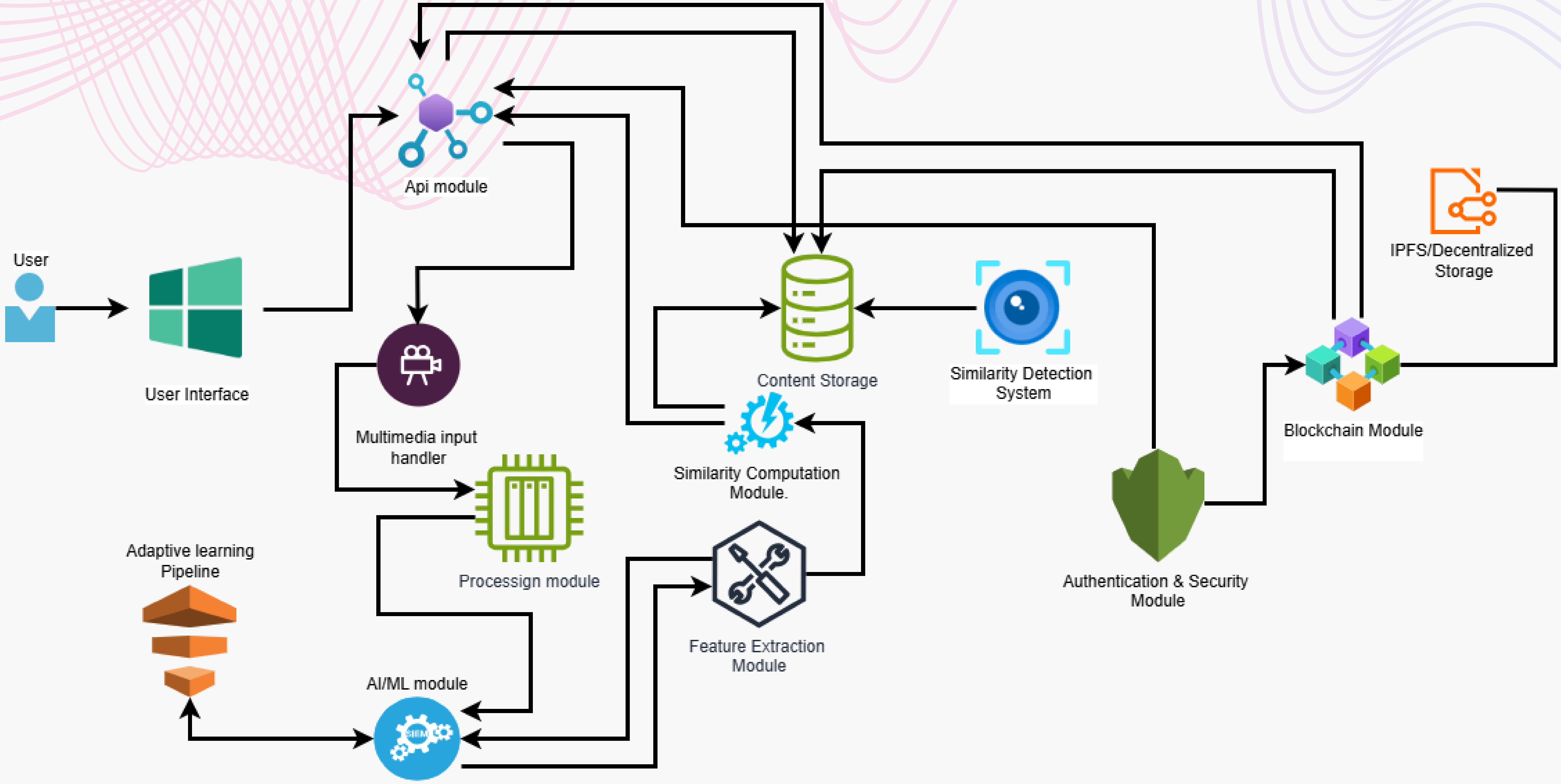
Adaptive learning mechanism to keep AI models updated against evolving infringement techniques to ensure the long-term effectiveness of the system.

Use decentralized intellectual property protection with blockchain for immutable and transparent record-keeping, providing robust proof of ownership and modification history.

Research gap

	Research 01	Research 02	Research 03	Proposed solution
AI-powered similarity detection	✗	✗	✗	✓
Real-time API integration	✗	✗	✗	✓
Continuous learning pipelines	✗	✗	✗	✓
Multimedia content coverage	✓	✓	✗	✓
Decentralized IP protection	✗	✗	✓	✓

Component Diagram



Functional Requirements

- Similarity Detection Across Multimedia Content
- Real-Time API Functionality
- Adaptive Learning System
- Blockchain-Based Ownership Records
- Multi-Format Content Support
- Lifecycle Documentation

Technologies and algorithms

Frameworks and Libraries:
TensorFlow: Framework for building and deploying deep learning models, including multimedia processing.
PyTorch: Flexible and widely used framework for training and fine-tuning multimedia similarity models.

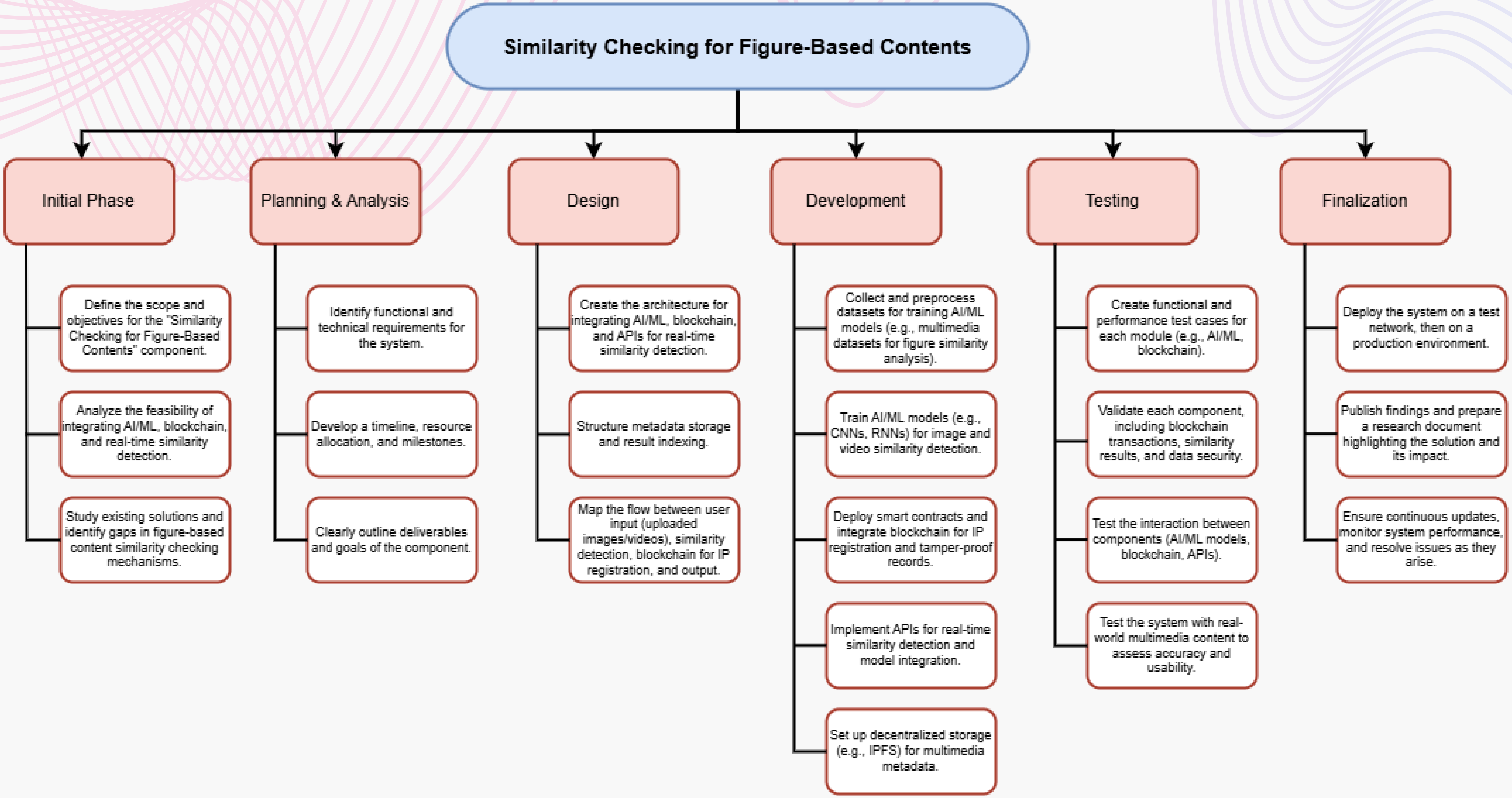
Video Models:
I3D (Inflated 3D ConvNet): Model for spatiotemporal feature extraction from video inputs.
C3D (3D ConvNet): Lightweight model for processing video data and extracting embeddings.
TimeSformer: Transformer-based model for video similarity detection and action recognition.

Preprocessing and Feature Extraction:
OpenCV: For extracting frames from videos and basic image preprocessing.
FFmpeg: For audio and video conversion, frame extraction, and compression.
Spectrograms: Convert audio signals into visual representations for CNN-based similarity detection.

PyTorch

FFmpeg

Work breakdown structure



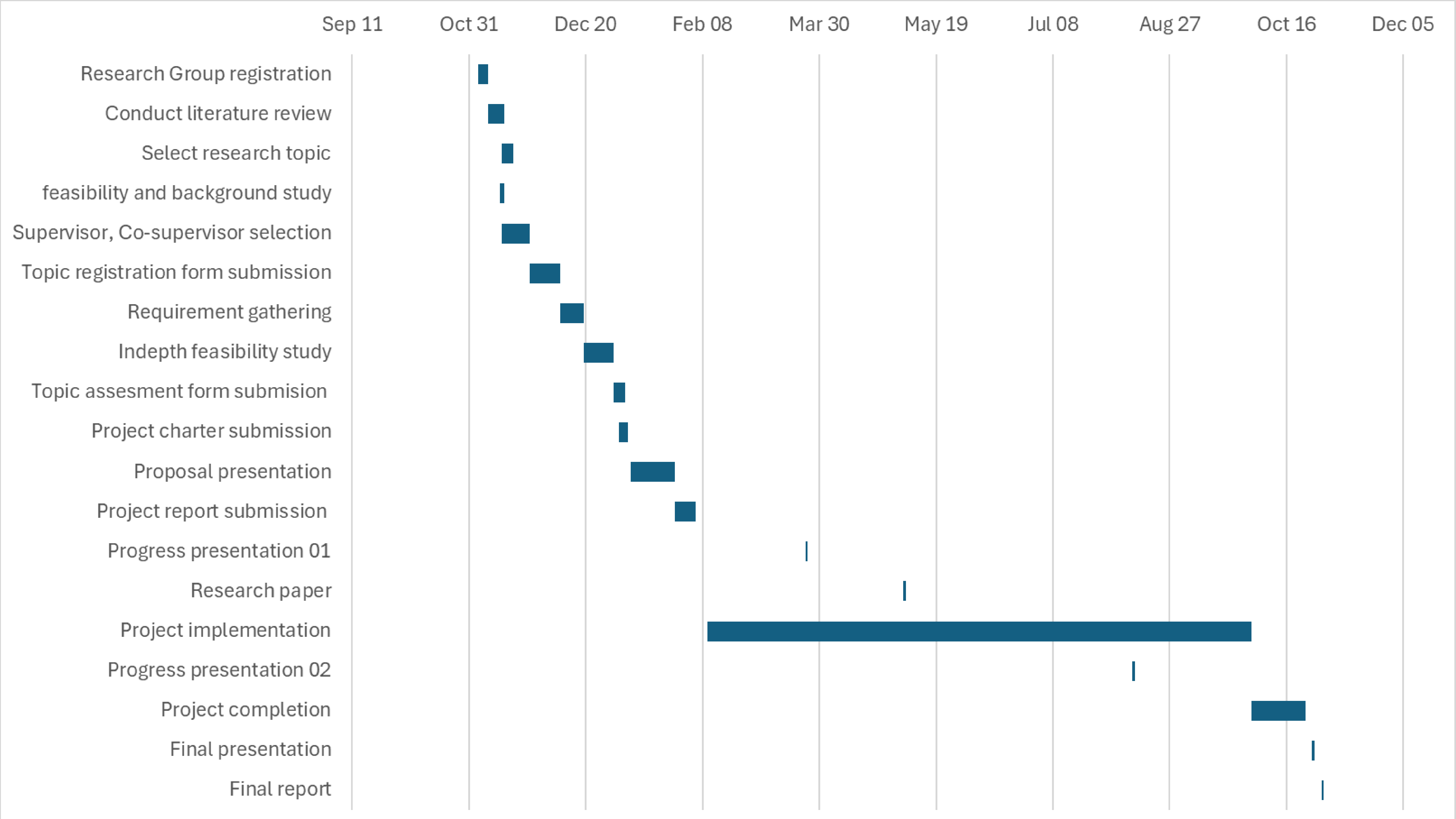
References

[1] R. Dorset, “Anti-piracy tech helps artists recover lost royalties,” The Guardian, Jul. 25, 2024. [Online]. Available: https://www.theguardian.com/music/article/2024/jul/25/mungo-jerry-frontman-ray-dorset-anti-piracy-tech-stops-artists-losing-out

[2] D. D. Koa and J. W. Lee, “V2A-Mark: Deep Visual-Audio Watermarking for Robust Copyright Protection,” arXiv preprint arXiv:2404.16824, Apr. 2024. [Online]. Available: https://arxiv.org/abs/2404.16824

[3] Z. Wang, M. Zhang, and K. Wu, “AIGC-Chain: A Blockchain-Enabled Lifecycle Recording System for AI-Generated Content,” arXiv preprint arXiv:2406.14966, Jun. 2024. [Online]. Available: https://arxiv.org/abs/2406.14966

GANTT CHART


Sep 11
Oct 31
Dec 20
Feb 08
Mar 30
May 19
Jul 08
Aug 27
Oct 16
Dec 05
Research Group registration
Conduct literature review
Select research topic
feasibility and background study
Supervisor, Co-supervisor selection
Topic registration form submission
Requirement gathering
Indepth feasibility study
Topic assesment form submision
Project charter submission
Proposal presentation
Project report submission
Progress presentation 01
Research paper
Project implementation
Progress presentation 02
Project completion
Final presentation
Final report

Thank You!