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Raktbeej: A Blockchain Based Royalty Distribution Platform For Academic Publishing And Citations

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Abstract: Research often lacks an incentive mechanism, and traditional Academic Publishing lacks transparent and equitable mechanism to reward the researchers and creates hindrances instead; this paper introduces the platform "Raktbeej", a blockchain-based platform that is inspired by the retroactive public goods funding which solves this problem by allowing authors to define royalty distribution percentages for cited works. Using smart contracts, Raktbeej automates the distribution of royalties to the cited authors whenever a donation is made to an author. We evaluate the potential of the platform to transform academic publishing for the better.

Index Terms - Blockchain, Academic Publishing, Decentralised Science, Smart Contracts, Citations, Ethereum, Retroactive Public Goods Funding.

I. INTRODUCTION

Research is the compass of humanity which has shaped the modern world, and yet there are not enough incentives to pursue research, although academic publishing drives knowledge creation it struggles with creating reward systems for the authors. Traditional models favor the publishers by hiding the journals behind a paywall and also by having an article processing fee, while authors and the cited authors receive little to no direct monetary benefit from it. This discourages research, promotes regurgitating old works with little changes in a new way so that authors have something to show, and undervalues foundational research.

Blockchain technology offers a decentralised solution to these challenges while also saving us from dealing with currency conversion fee, sanctions, political climate and other bureaucratic hurdles. Raktbeej is a platform that empowers authors to allocate royalty percentages to cited works. when a reader, institution, Layer 1 or Layer 2 blockchain donates funds, smart contracts automatically distribute royalties based on the predefined splits. This ensures, transparency, immutability and fairness and creates an incentive for authors.

Raktbeej draws inspiration from retroactive public goods funding, a concept familiarised by Optimism [1], where projects that have already delivered value to a community are rewarded after the fact. It is based on the fact that, "it is easier to determine what was useful than to determine what will be useful", in academia it translates to compensating authors for high value papers which have proven impactful through citations or breakthroughs.

II. BACKGROUND

Retroactive public goods funding, as in Optimism, rewards contributions after proving their worth [1], inspiring Raktbeej's approach to valuing papers post-upload. Decentralised science (DeSci) leverages blockchain to democratise funding, review, and access, challenging centralised publishing. Blockchain studies in academia explore peer review, citation metrics, and governance, but few combine royalties with retroactive filtering and off-chain review.

Raktbeej uses IPFS for storage and blockchain for royalties, with off-chain peer review and community feedback enhancing its DeSci alignment. Unlike traditional gatekeeping, it filters retroactively.

III. FRAMEWORK

Raktbeej integrates blockchain, IPFS, and DeSci principles to manage royalties, review, and feedback retroactively. Its operation includes:

A. Author Registration

Authors register, creating accounts and adding wallet ad- dresses to the platform.

B. Paper Upload and Royalty Setting

Authors upload papers to IPFS without restriction, generating a hash recorded on the blockchain with metadata. They manually specify cited authors' wallet addresses and a royalty percentage (e.g., 25%) reflecting retroactive value. No upfront review is required, as filtering occurs through funding.

C. Decentralised Peer Review

Peer review is conducted off-chain by registered users who have uploaded at least one paper to the platform, ensuring reviewer credibility. Reviews are submitted via the platform, providing authors with feedback for optional revisions, which can be re-uploaded to IPFS.

D. Community Feedback

The community offers open feedback through the platform, recorded off-chain but linked to the paper by recording it in the database. This iterative input refines papers, with contributors potentially earning recognition or micro-rewards from donations

E. Donation and Distribution

Donations in cryptocurrency are logged on the blockchain. Smart contracts split funds between the author's wallet and cited authors' wallets per the royalty percentage (e.g., $100 in ETH or USDT with 25% split $75 to author, $25 to cited authors). Low-value papers receive minimal funding, filtering them retroactively. The framework uses a user interface, blockchain for transactions, and IPFS for storage, with off-chain review and feedback supporting DeSci's decentralised ethos.

IV. POTENTIAL BENEFITS

Raktbeej offers several advantages:

- Retroactive Filtering: Funding reflects impact, naturally filtering out low-value papers without gatekeeping.
- Open Access: Uploads without review democratise publishing, aligning with DeSci.
- Credible Review: Requiring reviewers to have uploaded papers ensures informed feedback.
- Community Engagement: Feedback fosters collaboration and improvement.
- Fairness: Cited authors receive rewards, incentivising quality citations.

These features could create an inclusive, impact-driven publishing model.

V. CHALLENGES

- Wallet Accuracy: Manual input of cited authors' addresses risks errors.
- Review Quality: Off-chain review by platform authors may lack standardisation, needing reputation systems.
- Feedback Noise: Open community input could over- whelm authors with low-quality suggestions.
- Adoption: Getting researchers and the layman familiar with cryptocurrency and gaining mass adoption is one of the biggest challenges

VI. CONCLUSION

Raktbeej, inspired by retroactive public goods funding and embedded in decentralised science, offers a blockchain-based platform for royalties, peer review, and feedback. Authors up- load papers to IPFS, specifying cited authors' wallet addresses and royalty percentages, with smart contracts automating distribution. Off-chain peer review by platform authors and community feedback enhance quality, while retroactive funding filters low-value works. Challenges like review consistency and scalability persist, but Raktbeej's potential to democratise publishing is significant. Future work could explore reviewer reputation systems, feedback curation, and pilots within DeSci communities to refine and validate the approach.

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