A Customized Validator Recommender System for PoS Networks Using Similarity-Based Circular Visualization

Jaeuk Lee^{*}, Jisu Kim⁺, Hyunwoo Han[‡], Kyungwon Lee[§]



*§Department of Digital Media, Ajou University *Department of Business Intelligence, Ajou University *Stamper Co.,Ltd.
*woukl22@ajou.ac.kr,*kimjisu0203@ajou.ac.kr,*hyunwoo@stamper.network,§kwlee@ajou.ac.kr



Introduction



Advent of PoS for Enhanced Efficiency

- To address high energy use and security issues in PoW systems.
- In PoS networks, validators generate new blocks and verifying transactions.



Staking as an Investment Method

- Delegate cryptocurrency to validators to earn rewards.
- Attractive for investors seeking stable returns.



Lack of Staking-Related Services

- Struggling to choose appropriate validators.
- Propose a customized recommendation service.

Customized Assessment Metrics

Users can customize their evaluation criteria by adjusting the weights and specific criteria for the following five assessment indicators.



Contribution

Evaluates governance voting participation to assess validator reliability.



Stability

Assesses activity consistency and missed blocks to evaluate long-term reliability.



Popularity

Measures public trust based on the number of delegated tokens.



Commission

Evaluates delegation fees, considering their impact on investor returns.



Period

Assesses the duration of network activity, useful for long-term stability considerations.

User Scenario

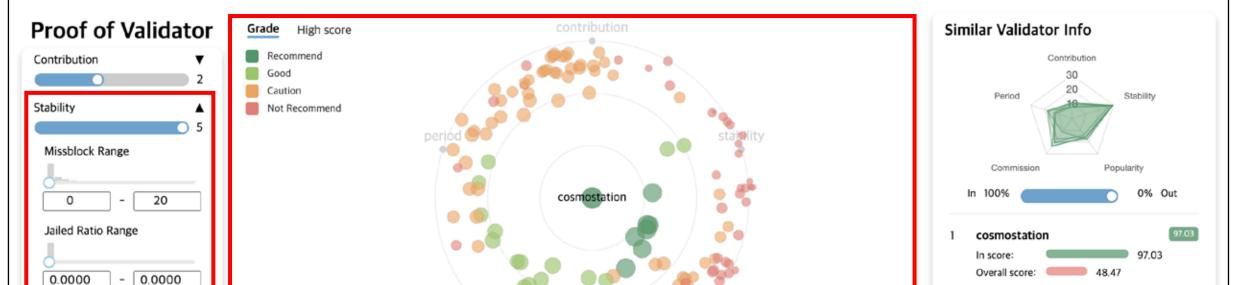
Assuming that the investor values stability and profitability, the settings can be configured as follows.



1. The weights



2. Specific Criteria

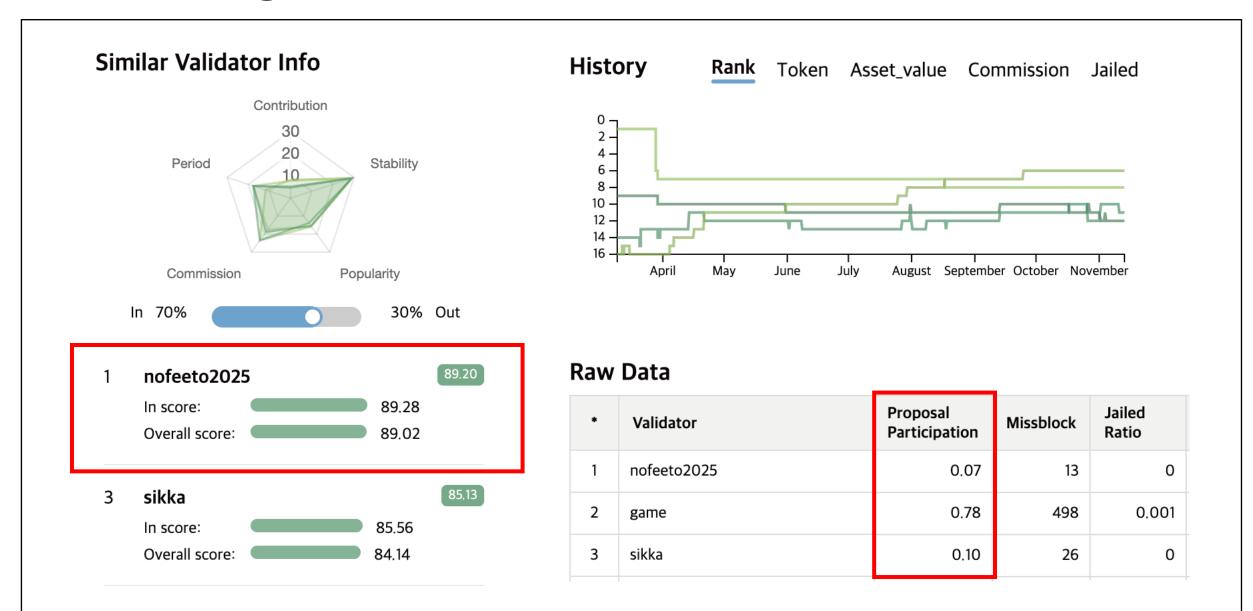


Asset Value Range allnodes 88.63 Overall score 16041300 4812390(Recommend Popularity History Raw Data Rank Token Asset_value Commission Commission cosmostatio Commission Range sg1 15769337695 nofeeto202 21.95 0.00 - 0.05 89.28 5,966,629,475,95 August September October Nov

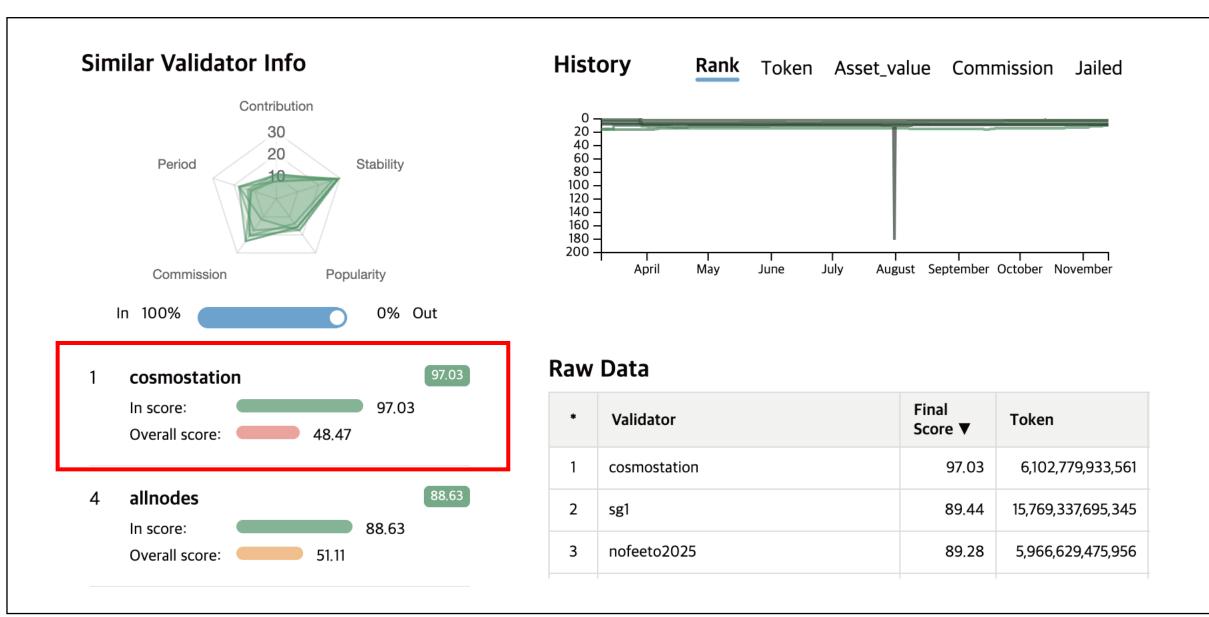
The weights of stability and profitability were **adjusted to 5 and 4**, respectively. As a result, it was noted that the **affected nodes are clustered around stability, commission, and popularity.**

Only the values corresponding to the adjusted sub-intervals of stability are reflected. Nodes **outside this interval are less affected by stability** and have been observed **to move towards the opposite axis**, period.

4. Reflecting Overall Scores



3. Reflecting Only Internal Scores



Cosmostation, with the highest internal score, has been recommended as the most suitable validator. However, it has a low overall score.

5. Select Optimal Validator



Cosmostation

if prioritize in-chain activity





overall activity

Game if user willing to accept some risk for high participation Increasing the overall score reflection rate to 30% made Nofeeto2025 the most suitable validator. Through similarity analysis, we discovered Sikka, which has previously unnoticed favorable metrics. Game, in second place, had a high participation rate but number of missed blocks and jailed ratio existed.

ACKNOWLEDGMENTS

This research was supported by the MSIT(Ministry of Science and ICT), Korea, under the National Program for Excellence in SW(2022-0-01077) supervised by the IITP(Institute of Information & communications Technology Planning & Evaluation) in 2024

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