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Reputation in the Academic World

Nardine Osman and Carles Sierra

27 April 2016

OPEN PEER REVIEW module
are you an open reviewer?

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Background

A FET FP7 project, proposing a paradigm shift in the way scientific knowledge is created, disseminated, evaluated and maintained.

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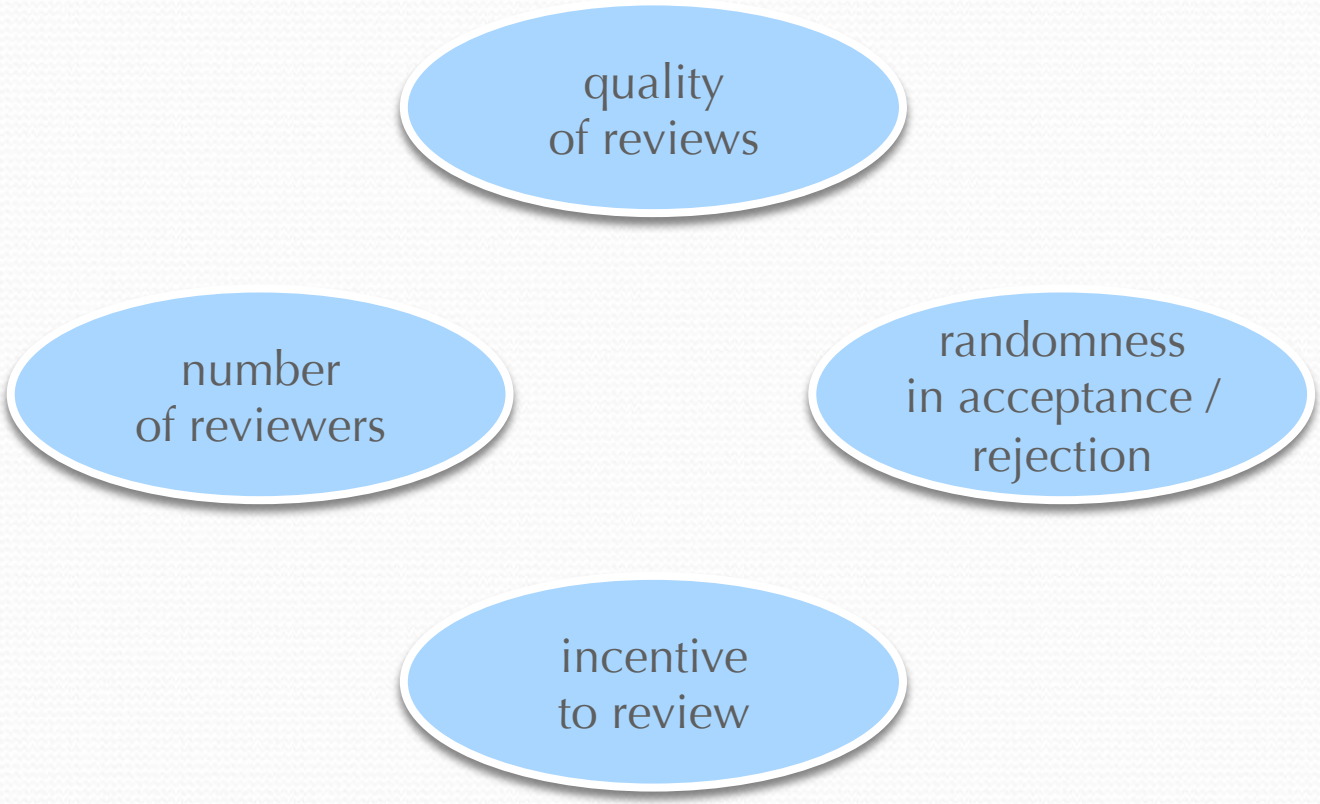
Problems with the Current Model



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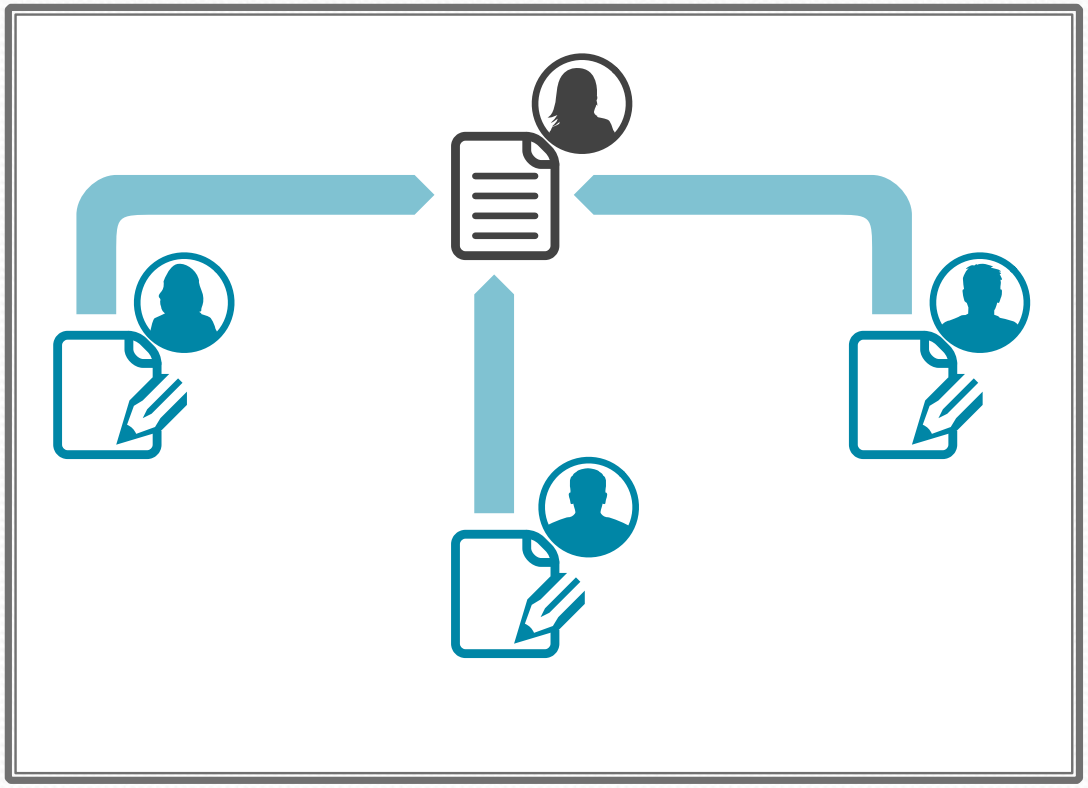
The Academic World



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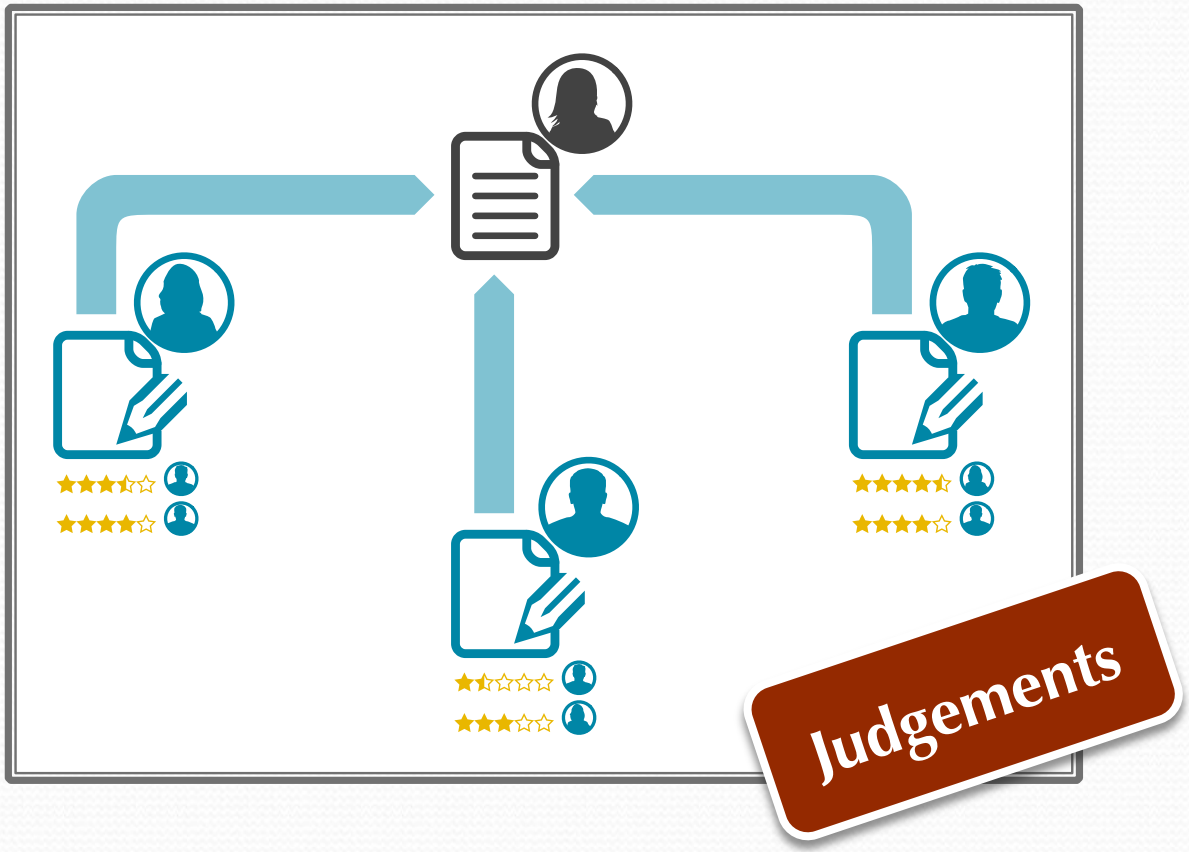
The Academic World

ARM: What's new?



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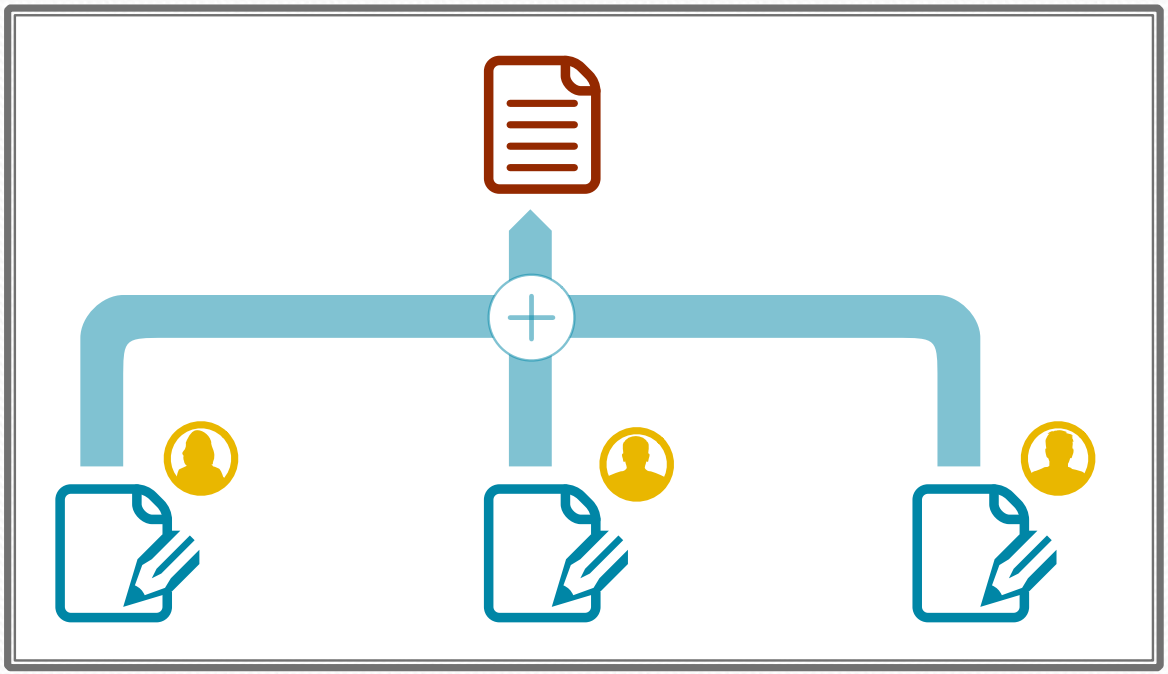
ARM: Reputation of a Paper

an aggregation of its reviews,
weighted by the reputation of reviewers



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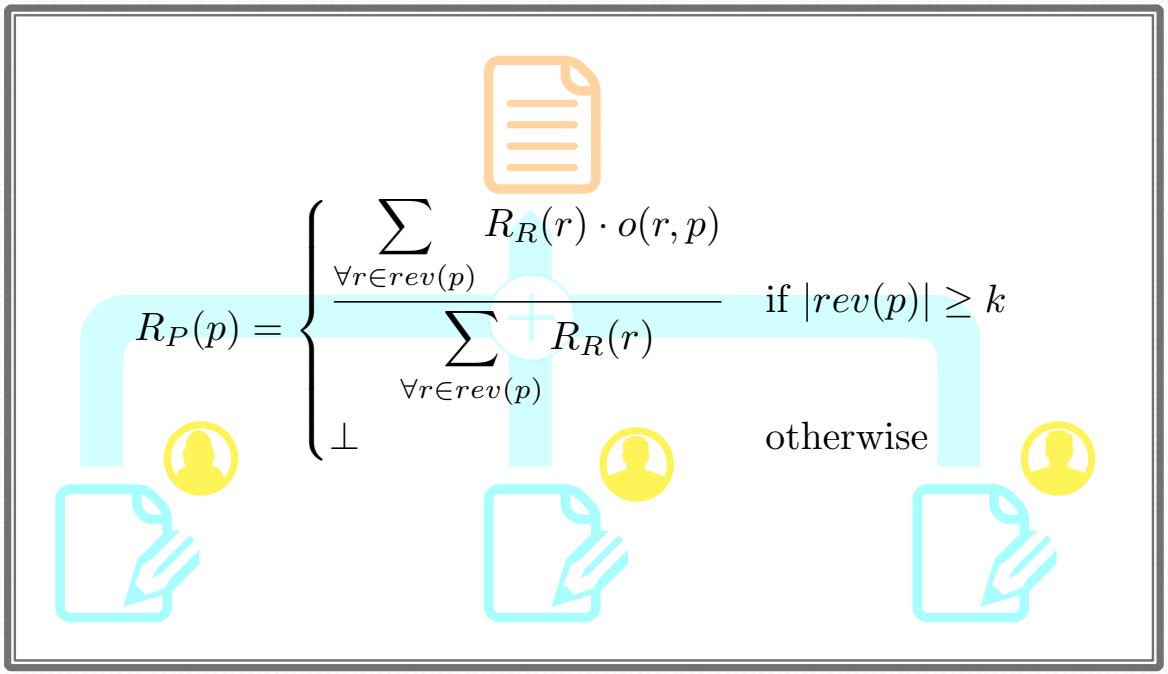

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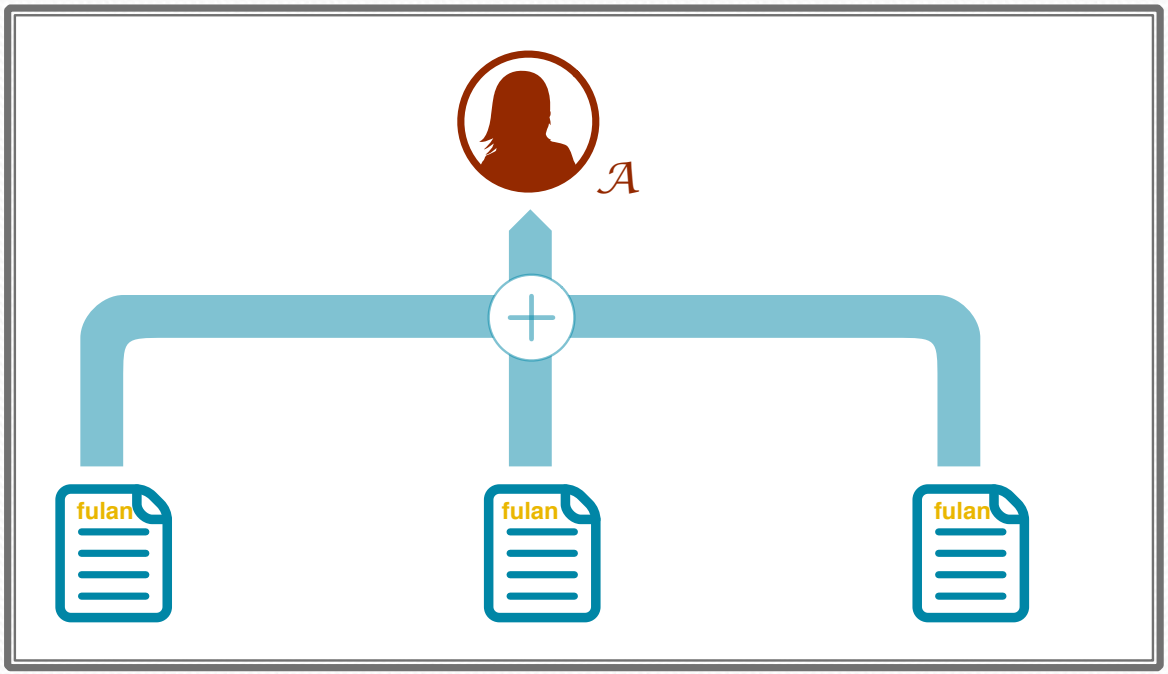
ARM: Reputation of an Author

an aggregation of her papers' reputation,
weighted by the number of authors



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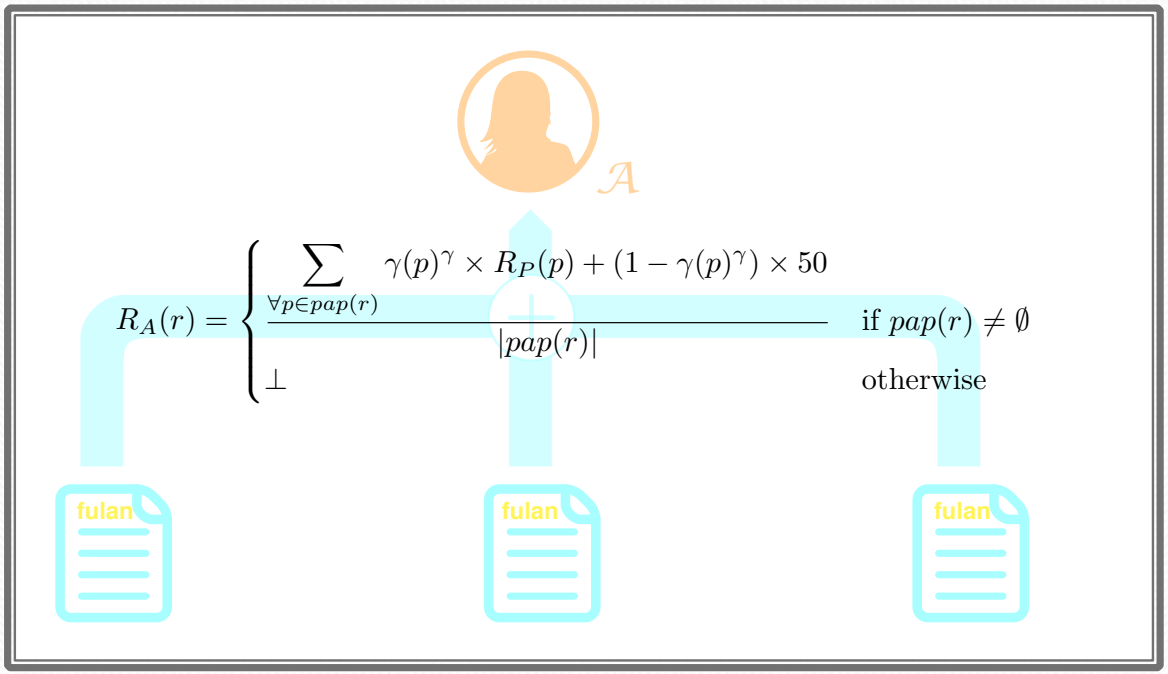

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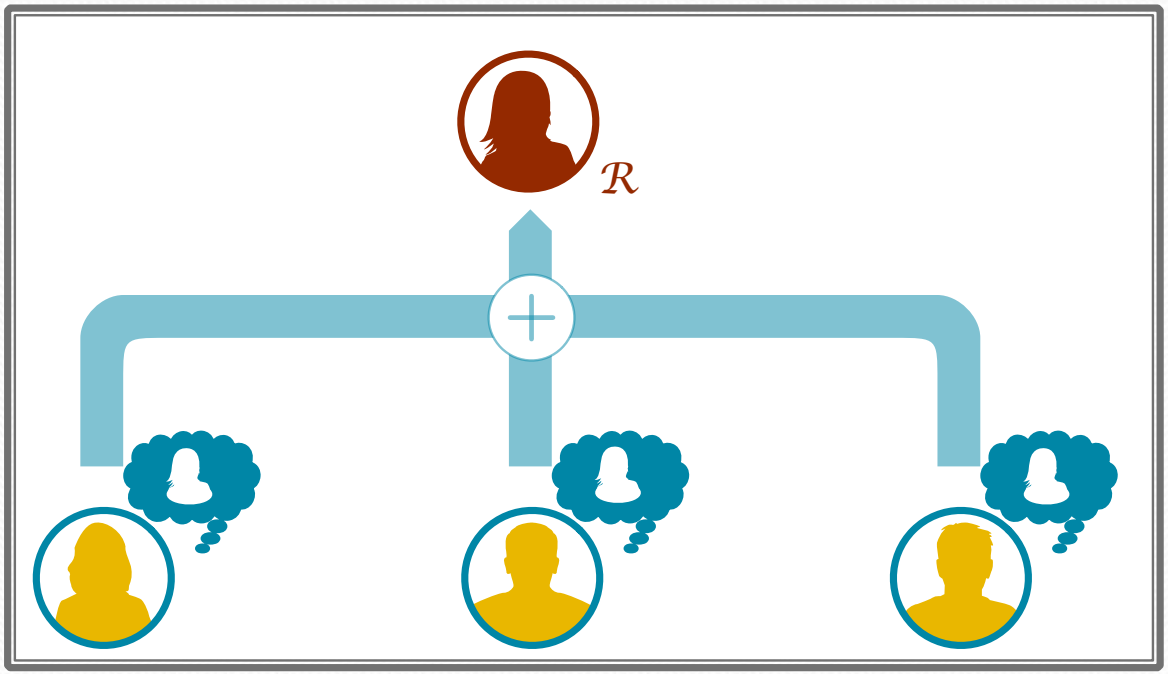
ARM: Reputation of a Reviewer

an aggregation of others opinions on our reviewer,
weighted by the reputation of the reviewers



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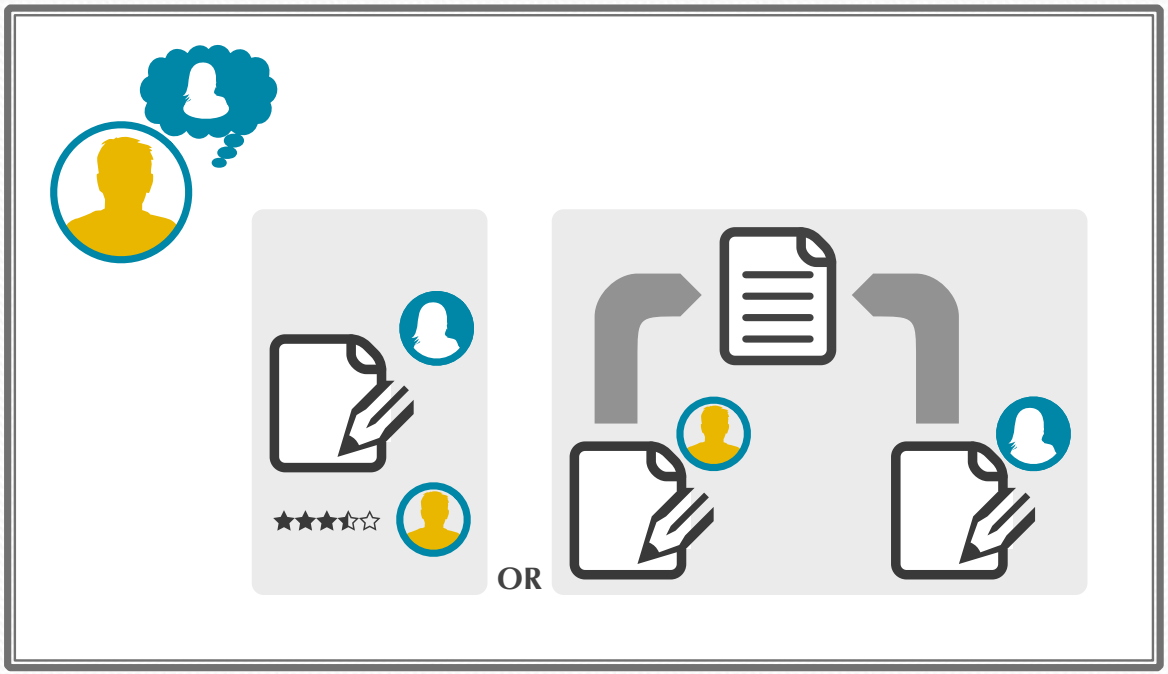

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$$v^*(r_i, r_j, p) = \begin{cases} v(r_i, r_j, p) & \text{if } v(r_i, r_j, p) \neq \perp \\ Sim(\bar{o}(r_i, p), \bar{o}(r_j, p)) & \text{If } \bar{o}(r_i, p) \neq \perp \text{ and } \bar{o}(r_j, p) \neq \perp \\ \perp & \text{Otherwise} \end{cases}$$

$\mathcal{R}$

$$R_R(r_i, r_j) = \begin{cases} \dfrac{\sum_{\forall v \in V^*(r_i, r_j)} v}{|V^*(r_i, r_j)|} & \text{if } V^*(r_i, r_j) \neq \emptyset \\ \perp & \text{otherwise} \end{cases}$$

$$R_R(r) = \begin{cases} \dfrac{\sum_{\forall r_i \in R^*} R_R(r_i) \cdot R_R(r_i, r)}{\sum_{\forall r_i \in R^*} R_R(r_i)} & R^* \neq \emptyset \\ 50 & \text{otherwise} \end{cases}$$

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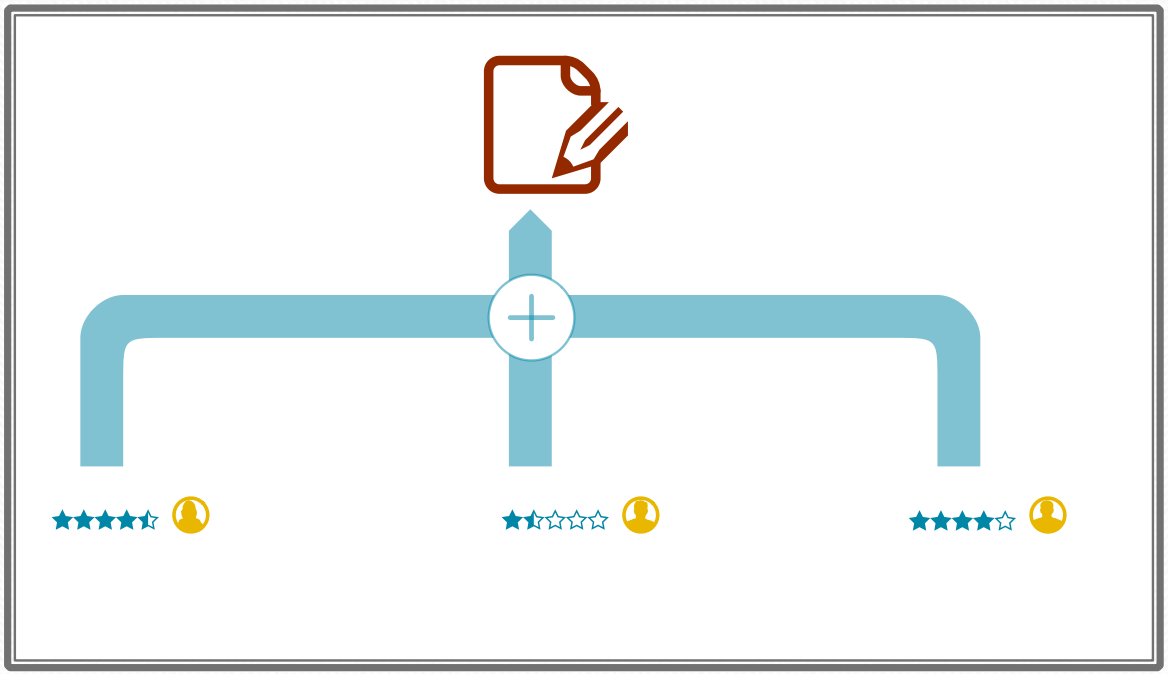
ARM: Reputation of a Review

an aggregation of its judgements,
weighted by the reputation of the judges/reviewers



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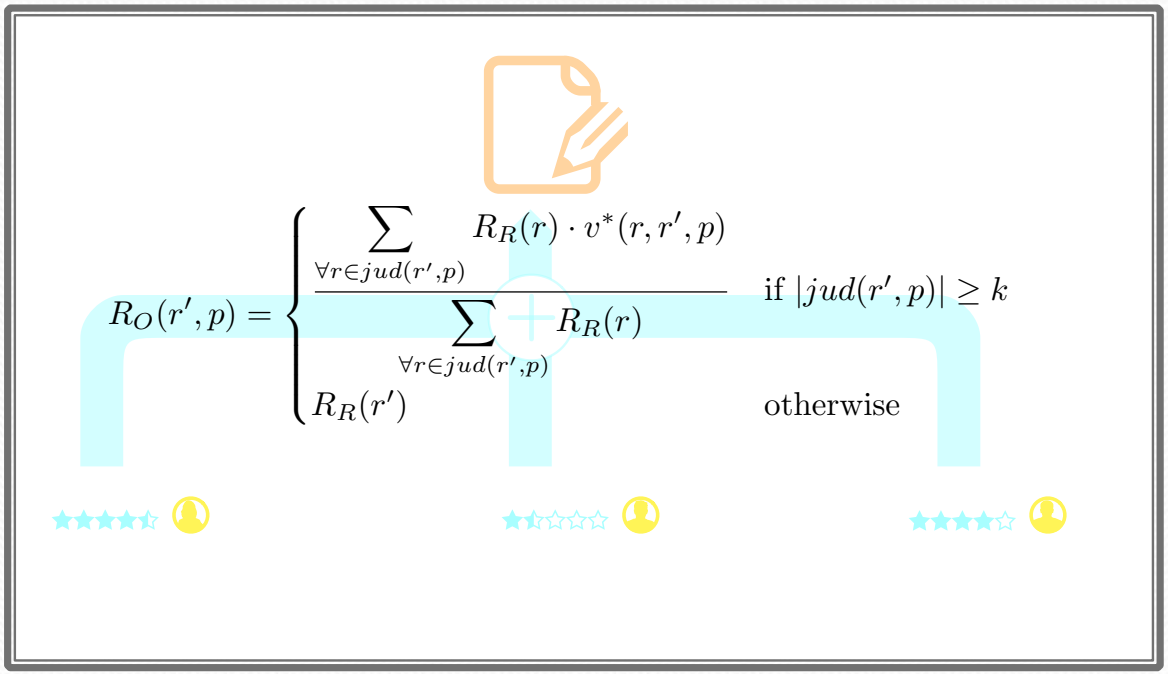

$$R_O(r',p) = \begin{cases} \dfrac{\sum_{\forall r \in jud(r',p)} R_R(r) \cdot v^*(r,r',p)}{\sum_{\forall r \in jud(r',p)} R_R(r)} & \text{if } |jud(r',p)| \geq k \\ R_R(r') & \text{otherwise} \end{cases}$$

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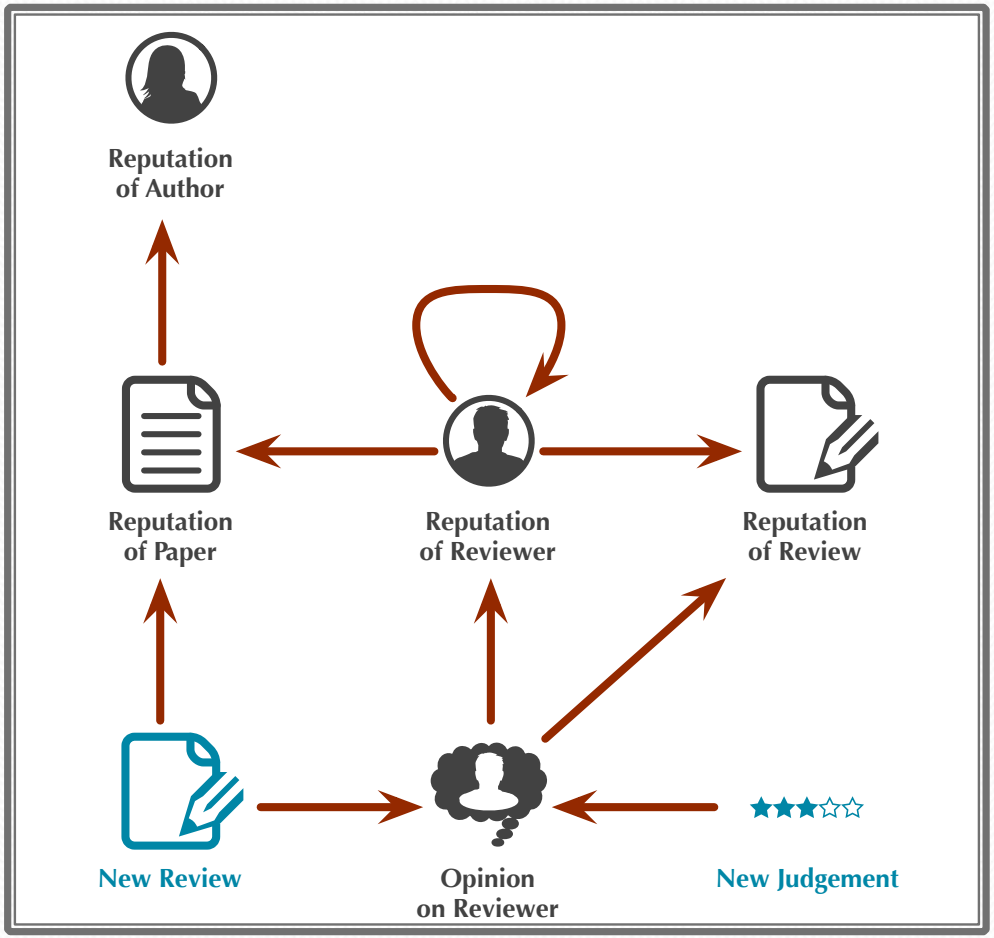
Dependencies & Algorithms



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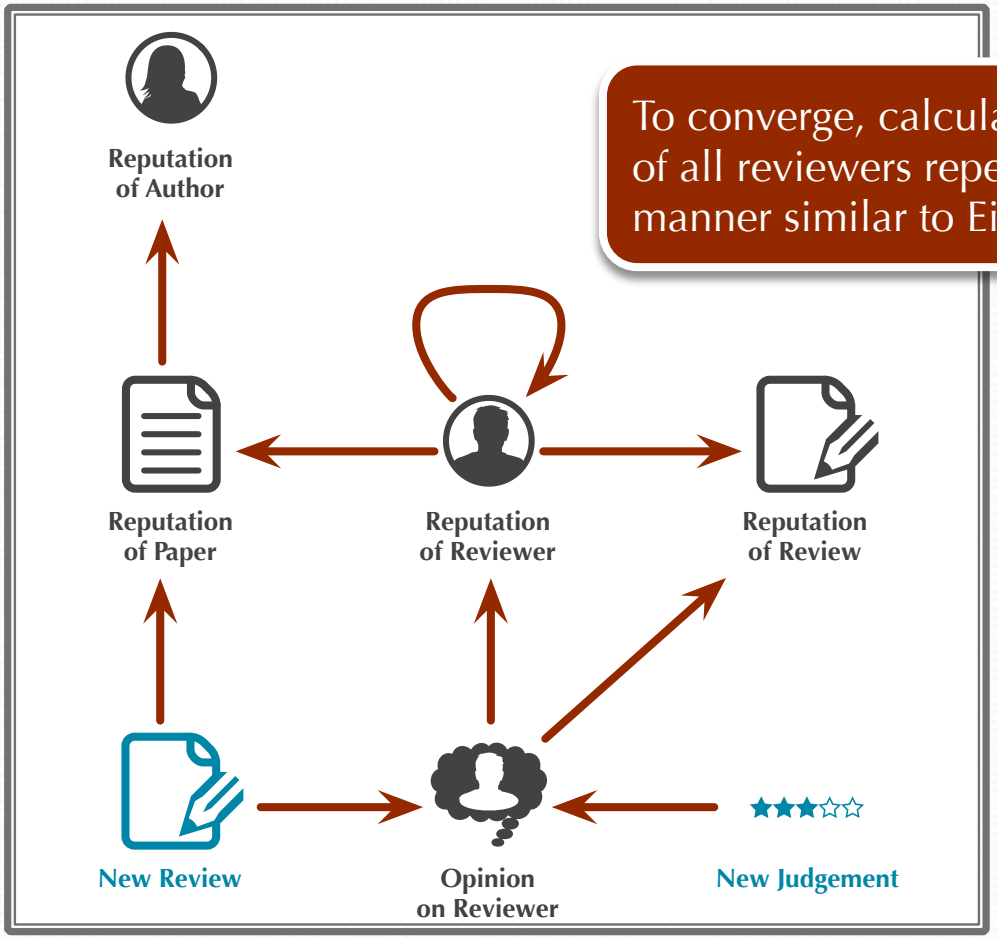

To converge, calculate the reputation of all reviewers repeatedly, in a manner similar to EigenTrust.

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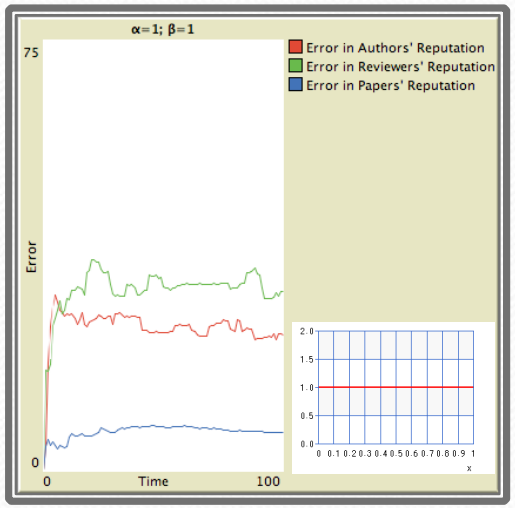
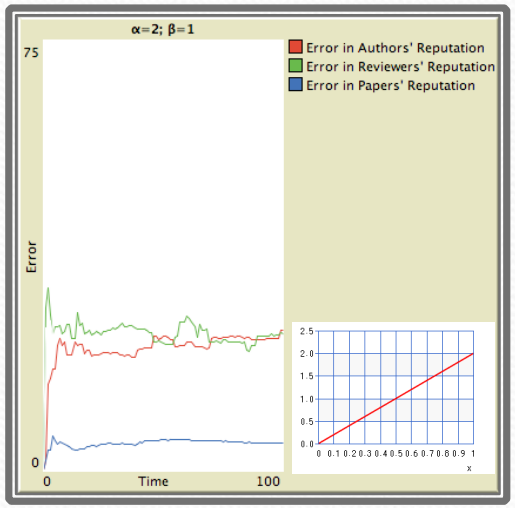
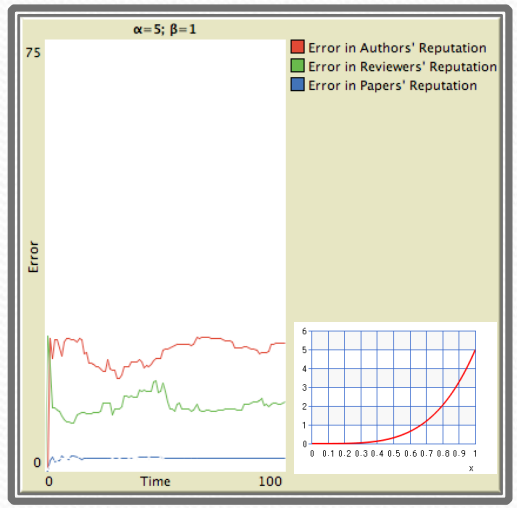
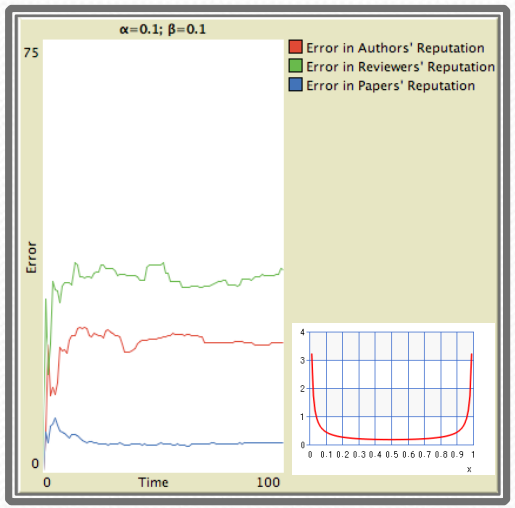
Evaluation via Simulation

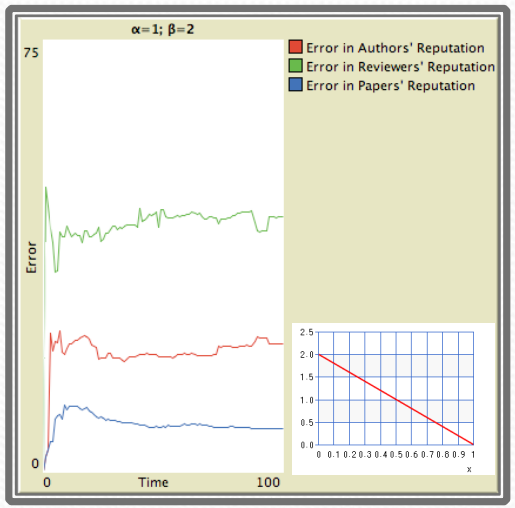
Error in reputation inversely proportional to reviewers' quality

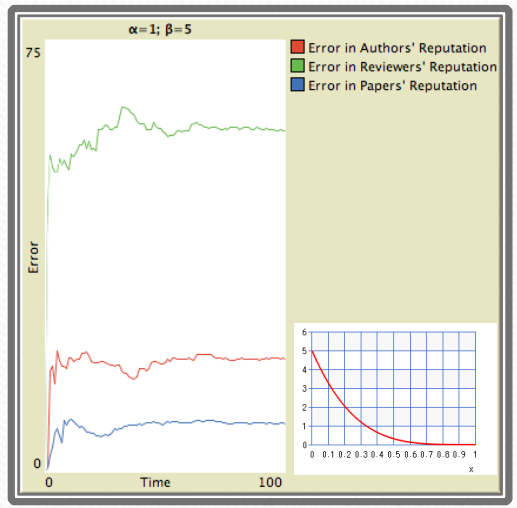












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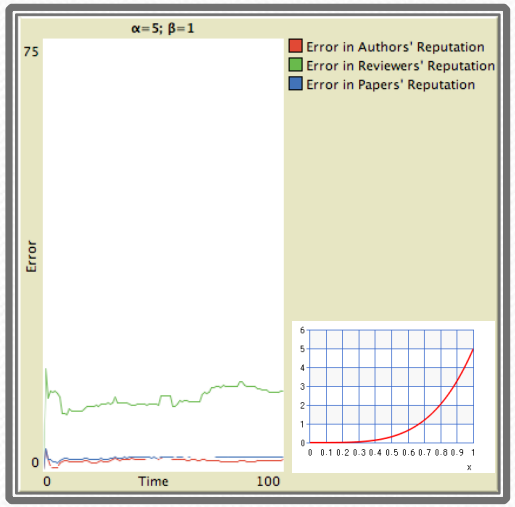
Evaluation via Simulation

Error in authors' reputation depends on the number of co-authors



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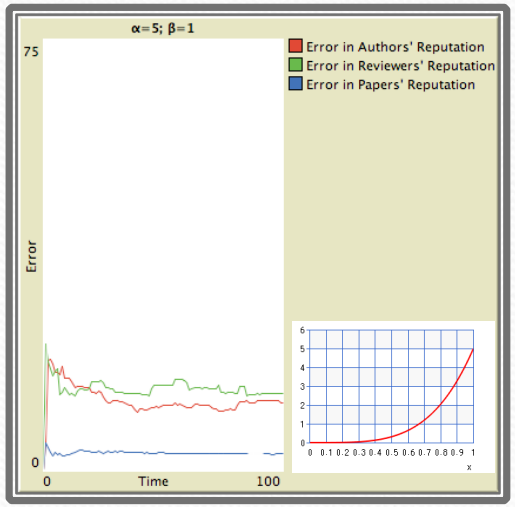
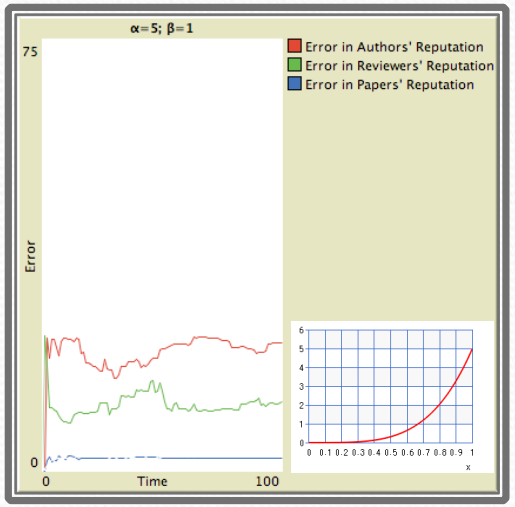
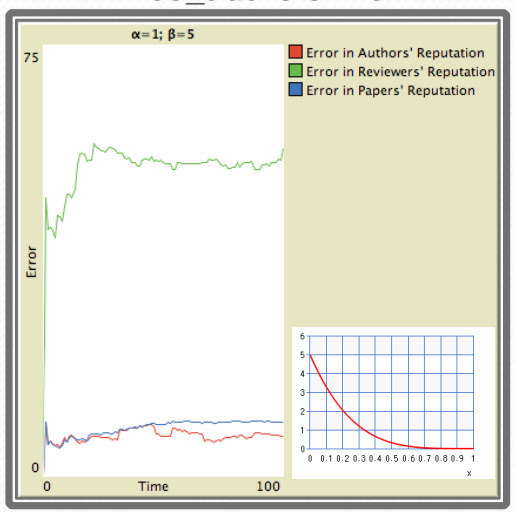
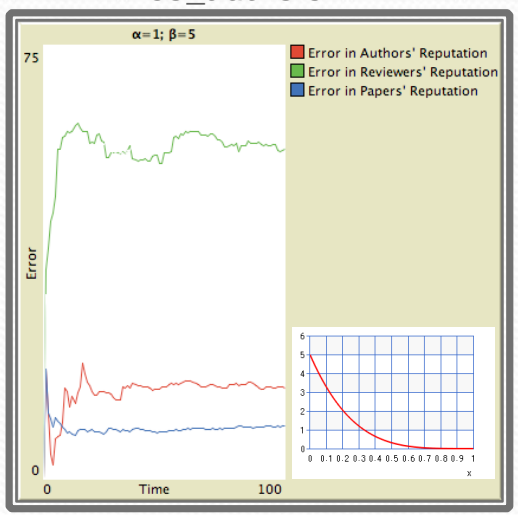


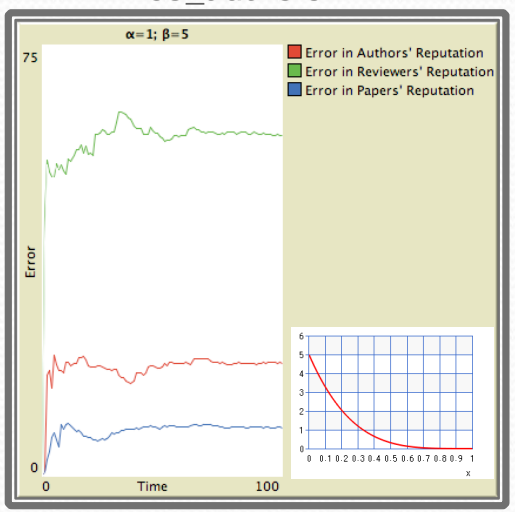
#co_authors = 1



#co_authors = 2







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Conclusions

A **reputation model** for the **academic world**:

- *Novelty* in introducing *judgements*
- More *precise* reviewer reputation resulting in more precise paper reputation, and hence, more precise author reputation
- Moving towards *open peer reviews*

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Thank you!

Questions / Comments?

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