# Evolution of a Random Recursive Tree with limited memory

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A random recursive tree is a simple model describing the growth of a network iteratively. At each step, a new element chooses uniformly at random on of the present nodes to connect to, thereby constructing a growing tree. This model is often present in a large variety of applications, from algorithmic analysis to the study of social networks.

In a recent article *Evolution of Recursive Trees with Limited Memory*, Angel et al. considered a version of this model in which nodes age out. They suggest to consider instead a recursive tree in which at each step, the new element chooses uniformly at random a node to connect to belonging to the $j(n)$th last connected nodes. They study this model assuming $j(n) \sim n^\beta$ or $\theta n$ for $\beta, \theta \in (0,1)$, and prove various asymptotic results on this model.

The aim of this project is to continue this analysis and extend their result to additional situations, such as $j(n) = n + o(n)$ and $j(n) \leq \log n$. This project does not lead towards a PhD project.

**References:**

- O. Angel, S. Bhamidi, L. Donderwinkel, S. Maitra, P. Sakanaveeti (2025). *Evolution of Recursive Trees with Limited Memory.*
- M. Pain and D. Senizergues (2022) *Correction terms for the height of weighted recursive trees* Ann. Appl. Probab. 32(4), 3027–3059.