Ling Xu and David Mould of Carleton University in their work, *A Procedural Method for Irregular Tree Models*, present an interesting approach to generate trees procedurally. The motivation for research in this area is to take away the tediousness of manual tree modelling by asset creators. By incorporating this and related techniques, content creating studios can effectively reduce costs of otherwise nearly impossible to accomplish highly diverse fauna manual modelling.

The work presented builds on top of previous work done by the same authors. The new approach utilizes **Yao graph** to reduce the edge count without decresing the overall quality. The algorithm presented accepts a wealth of parameters that influence the tree generation process. Among these parameters, the noteworthy are the trimming volume, environmental factors and direct user control.

The article, after a brief overview and contrast of previous works in the field, gives a high-level introduction to the algorithm and the main ideas behind it. The new approach utilizes Poisson disc distribution of nodes within a trimming volume to obtain an irregular graph. This method supercedes the use of latices and grids with all their shortcomings. Next, the authors discuss the algorithm in detail and provide a recursive version of pseudocode for clarity. Lastly, they provide a detailed overview of different parameters and their effects on the procedure.

Ther results are illustrated with generated trees' renderings and cross-section being compared to actual photos of live trees. Authors admit there is no reliable metric for measuring tree quality hence they fallback to visual comparison. While all trees exhibit a natural appearance, there subtle difference between trees generated using the approach being discussed and the self-organizing trees by Palubicki et al. For instance, the former appear more croocked, are less regular and the gaps between branches, observed in a 2D projection of a tree, are more unevenly ditributed.

The figures provided in the publication are of a great value and truly amplify the appreciation of the new method. The discussion of different parameters for the algorithm incorporates a wealth of images illustrating the effect of said parameters' configuration. It quickly becomes apparent that the mothod can be used to generate various kinds of trees.

Apart from illustrations of generated trees, Xu et al. provide two tables that show different characteristics of tree models in various parameter configurations, such as number of nodes, number of endpoints and time to generate in seconds. Apart from quite long time require to generate a tree, the authors admit their approach still carries a large memory footprint.

While the algorithm provides quite satysfying results, it would be beneficial to investigate the feasability of also generating other items that are characteristic to trees. The list of these items may include leaves, different imprefections and damage.

## References

Ling Xu and David Mould. 2012. Graphics Interaction: A procedural method for irregular tree models. *Comput. Graph.* 36, 8 (December 2012), 1036-1047. DOI=10.1016/j.cag.2012.08.005 http://dx.doi.org/10.1016/j.cag.2012.08.005