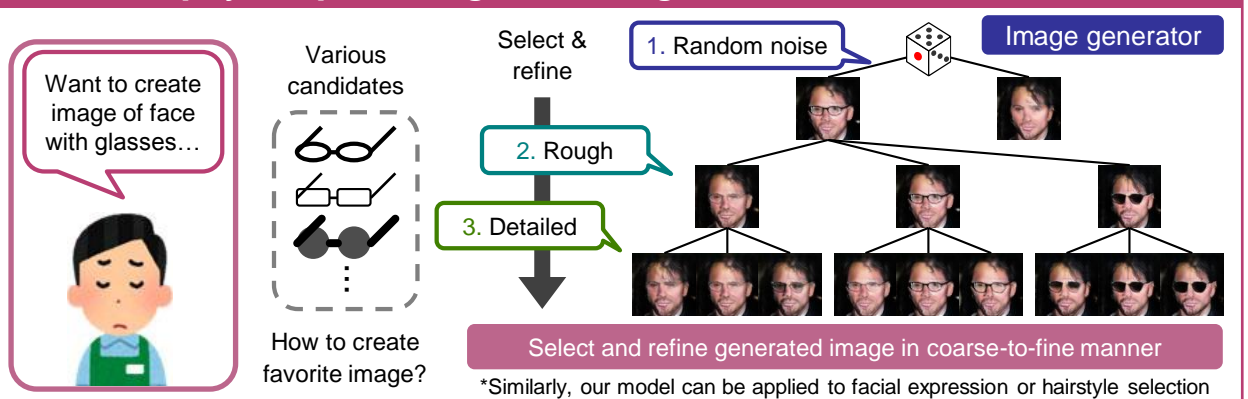




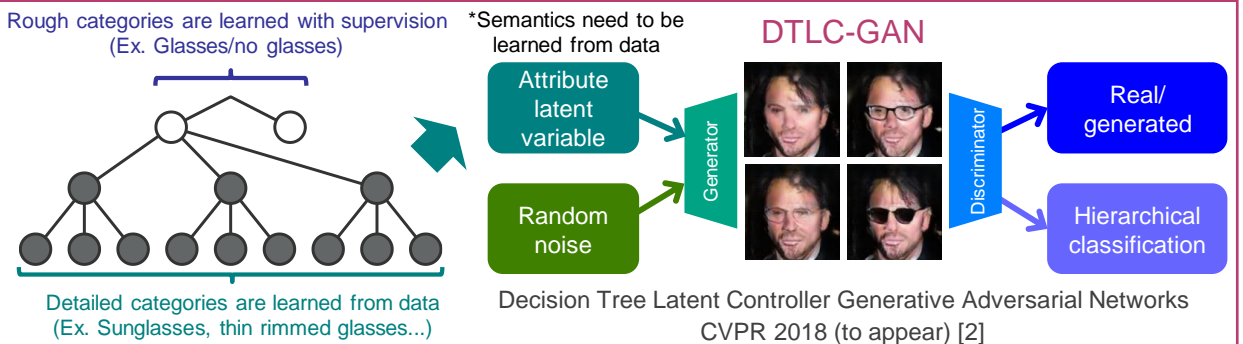
## Abstract

We aim to develop a generative model that **makes it easier to create an image a person has in mind**. When we create an image of an object from scratch, we typically **draw it coarsely first, and then refine the details**. For example, when we create an image of a face with glasses, we first select the main categories, e.g., transparent/colorful glasses, and then define the details, e.g., small/big colorful glasses. This fact motivated us to **derive hierarchical selection functionality in a generative model**. A possible solution would be to collect sufficient detailed annotations to solve the problem in a fully supervised manner. However, this requires high annotation costs. To avoid this, we propose an extension of a generative adversarial network (GAN) called the **decision tree latent controller GAN (DTLC-GAN)** that can discover detailed categories from data without relying on detailed supervision. **Our DTLC-GAN is a natural extension of GANs**. Possible future work includes **applying it to other data and tasks**.

## [Objective] Generating favorite images with “selective” decisions



## [Model] DTLC-GAN: Discovering detailed categories from data w/o detailed supervision



## [Application] DTLC-GAN is general model and can be applied to other data &amp; tasks

1. Other data: Audio, speech, ...

2. Other tasks: Retrieval, editing, translation, ...

## References

- [1] T. Kaneko, K. Hiramatsu, K. Kashino, “Generative Attribute Controller with Conditional Filtered Generative Adversarial Networks,” in *Proc. The 30<sup>th</sup> IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.
- [2] T. Kaneko, K. Hiramatsu, K. Kashino, “Generative Adversarial Image Synthesis with Decision Tree Latent Controller,” in *Proc. The 31<sup>st</sup> IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.



<http://www.kecl.ntt.co.jp/people/kaneko.takuhiro/projects/dtcl-gan/>

## Contact

**Takuhiro Kaneko** Recognition Research Group, Media Information Laboratory