Sketch Less for More:
On-the-fly Fine-grained Sketch-based Image Retrieval

Ayan Kumar Bhunia[a]   Yongxin Yang[a]   Timothy Hospedales[a,b]   Tao Xiang[a]   Yi-Zhe Song[a]

a. SketchX Lab, CVSSP, University of Surrey, UK
b. University of Edinburgh, UK

http://sketchx.ai

Fine-grained SBIR
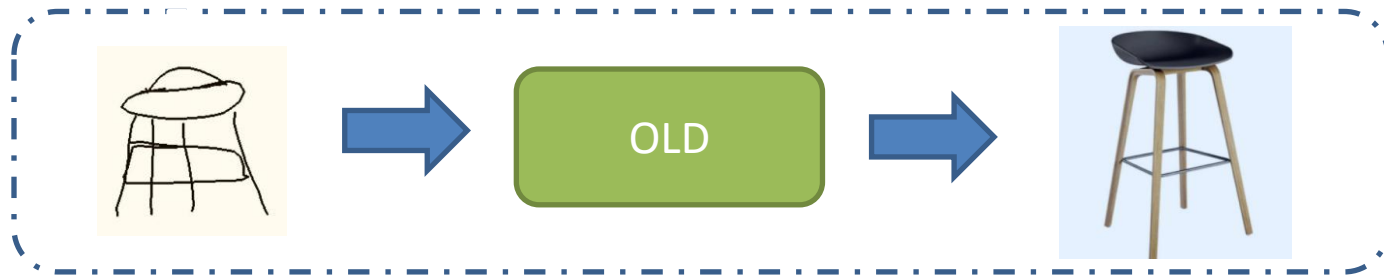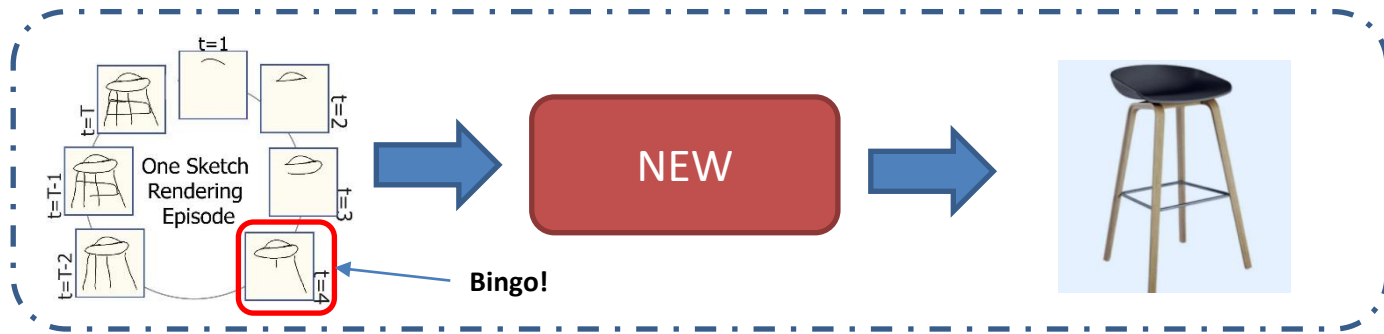

Sketch   Gallery Images

Problem – "I can't sketch"

- **Time** taken to draw a *complete* sketch

- **Drawing skill** of the user

Old Setup: sketch first, *then* retrieve

New *On-the-fly* Setup: retrieve *as* you sketch

Less is more!

Why *On-the-fly*?

- **Natural**: incomplete sketches can *already* retrieve!

- **Faster**: *no need* to sketch the whole thing

- **More accurate**: modelling the *sketching process* does help

In most cases, we can retrieve with ~30% less strokes!

Contributions

- **Reinforcement Learning** (RL) for cross-modal modelling.

- **Reward design** to encourage early retrieval

- **Rank optimization** over a complete sketch drawing episode