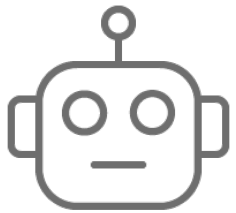
Collaborative Content Creation

Surya, Gaurav, Niyati, Balaji

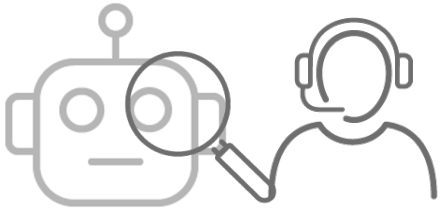
Academic Landscape

- Douglas Engelbart (1962) - Machines can do more than just numerical computation – they can be used for augmenting human intelligence

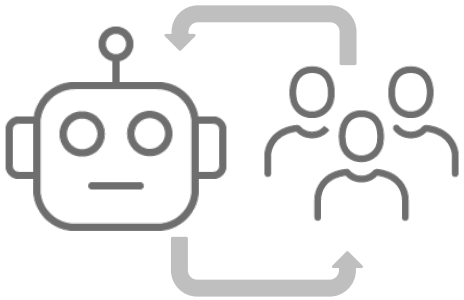
- Conferences : SIGCHI, CSCW, ICCC, IUI ...



- Language Models
- Multimodal Content Generation



- Interpretable Models
- Counterfactual Explanations

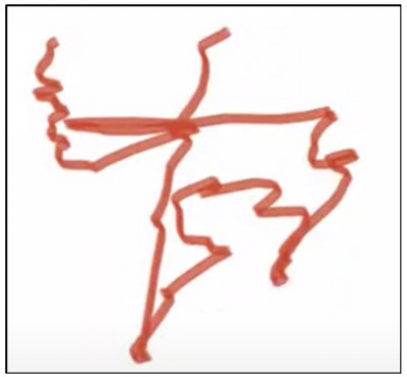


- Active Learning
- Human-in-the-Loop
- Interactive collaboration with multiple humans?

Collaborative Semantic Inference (2019)

Why Collaboration for Creation?

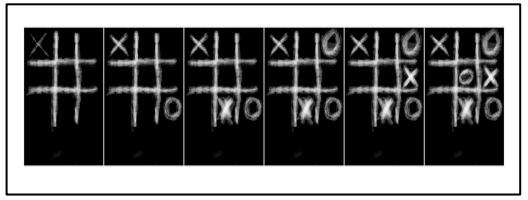
Crowd Co-Creation Scenarios (ICCC 2020)

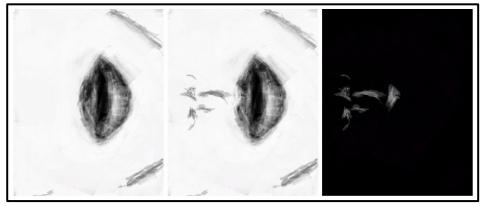


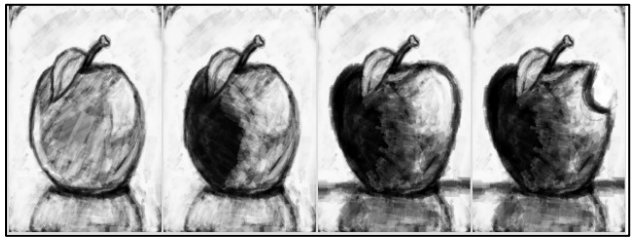
Creativity = *Novelty* + Value

Individual	●	●
Collaborative	●	●
Collaborative + Voting	●	●

Sketch-a-bit (AAAI 2012)



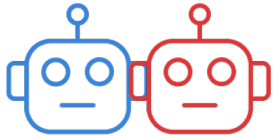




Emergent Remix Culture in an
Anonymous Collaborative Art System

Adobe *changing font is pretty much where my idea of novelty ends

Co-Draw (ACL 2019)



Stakeholder

Teller (T) sees a clipart-based scene and conveys textual dialogue prompts

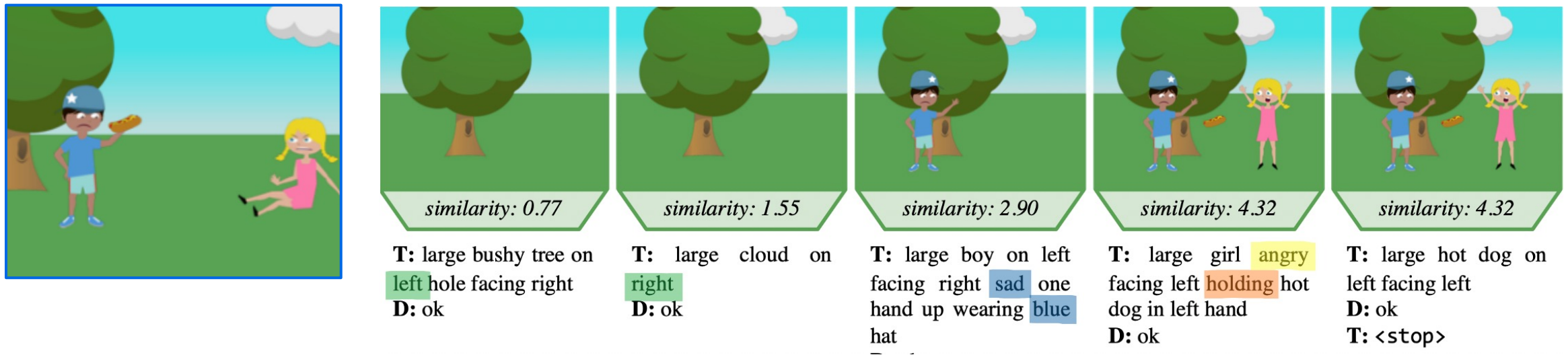
Can't peek into the **Drawer's** scene

Needs to plan well; context-specific suggestions; when to peek?

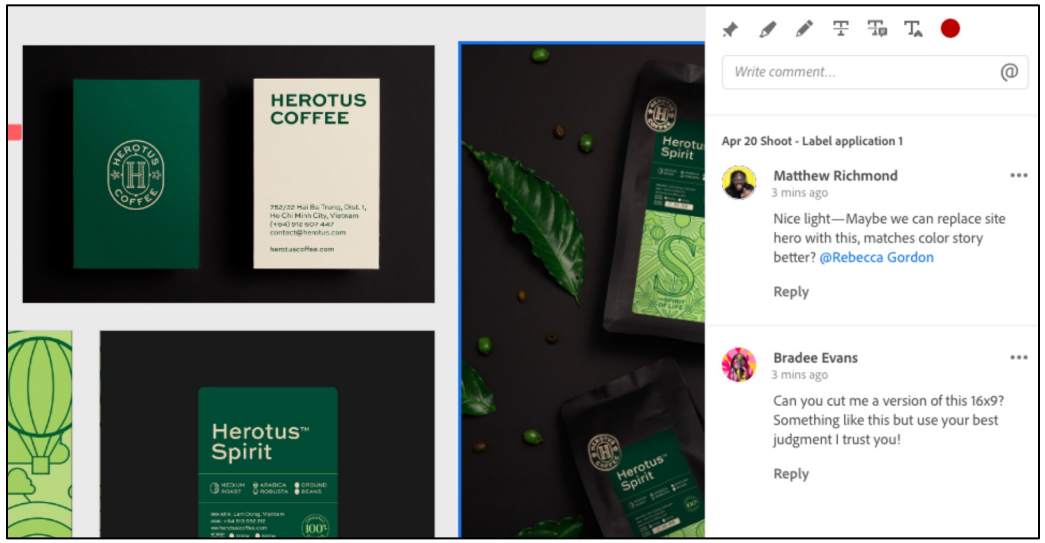
Drawer (D) understands intent of the **Teller** and generates that scene

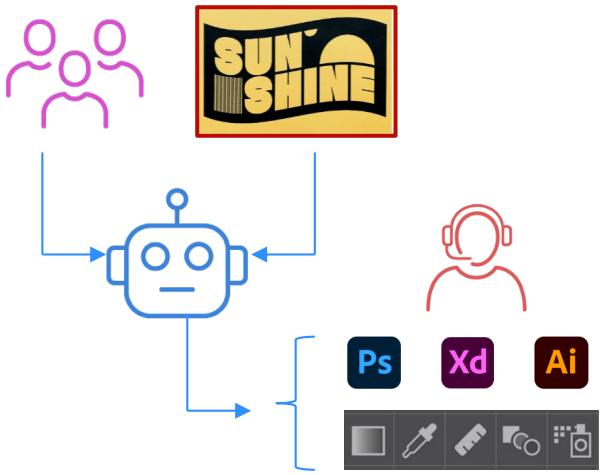
Ask for clarifications; Avoid illogical placements; commonsense

Creative Pro



AI – Teller; Human - Drawer



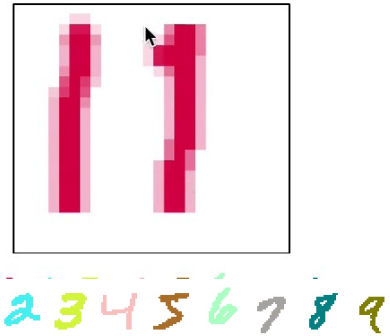


Knowledge graph grounded goal planning for open-domain conversation generation (AAAI 2020)

Asking clarifying questions in open-domain information-seeking conversations (SIGIR 2019)

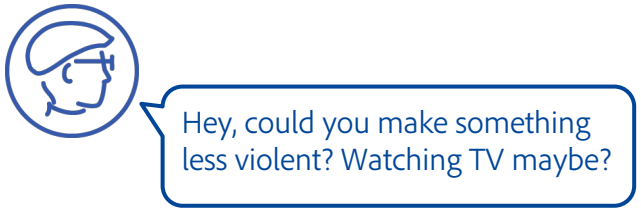
Search on the replay buffer: Bridging planning and reinforcement learning (NeurIPS 2019)

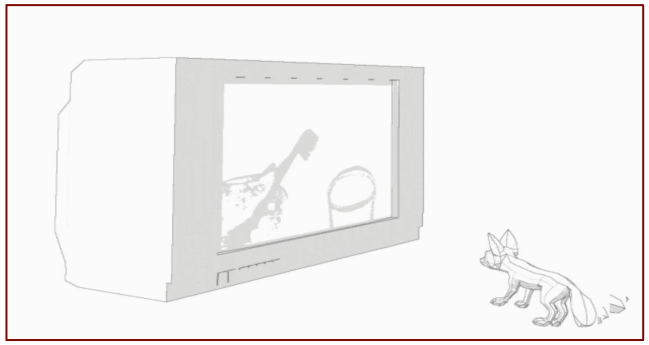
Self-classifying MNIST digits using Neural Cellular Automata (Distill 2020)



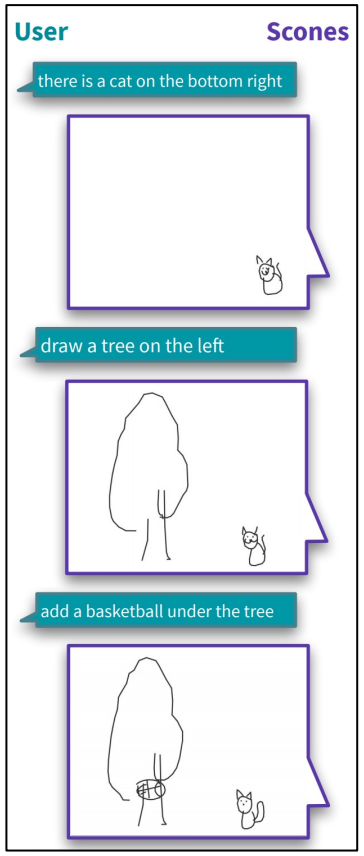
Human – Teller; AI - Drawer

Word to World, Xin Yue (2020)



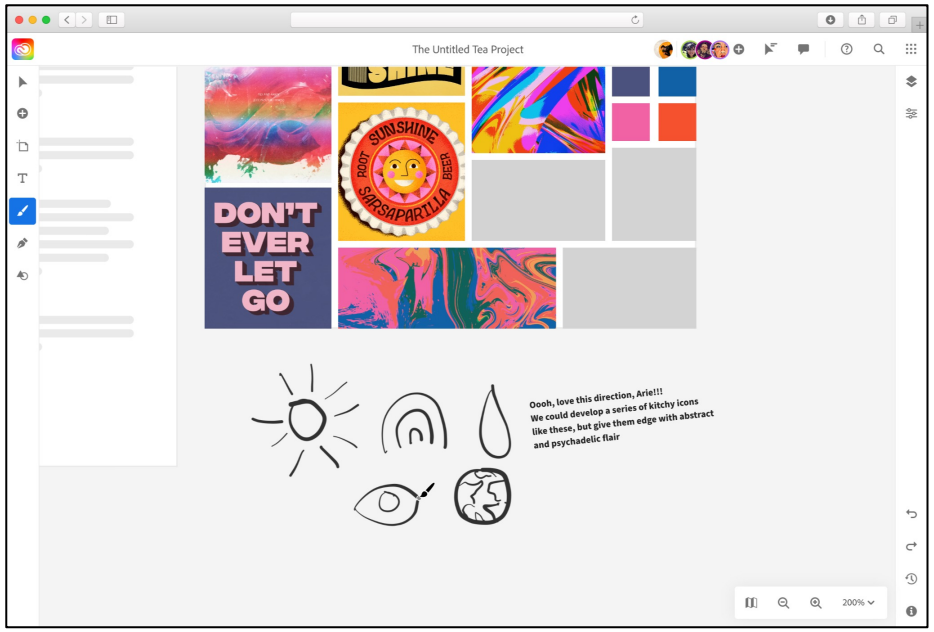


Scones (IUI 2020)



Conversational Authoring of Sketches, based on Co-Draw

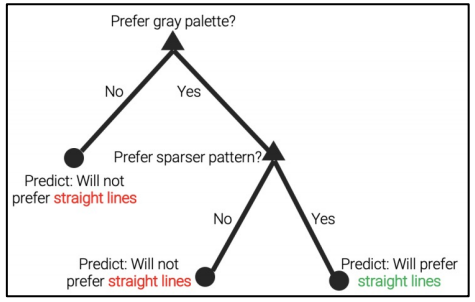
Creative Sketching Partner (IUI 2020)



Visual Similarity
Conceptual Similarity

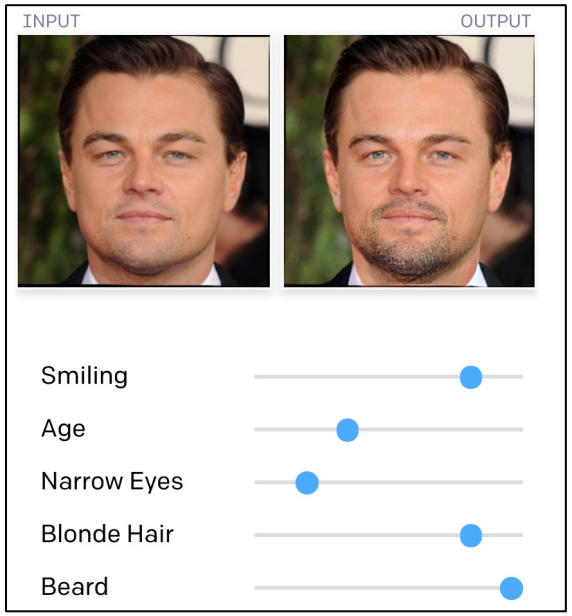
Casual Creators and Data Instrumentation

Predicting Preferences (ICCC 2020)



In, and From, Interactive Generative Art

GLOW (2018)



Using latent representations as abstract palettes – discover new forms of content

Meet the GANimals (2020)

Discover new animals and vote on their features – based on BiGAN

Summarizing...

- Nascent field; lots of interesting open problems
  - Long term planning, interaction design, clarifications
  - Platform-specific and interoperable tooling recommendations
- Lack of good data or evaluation schemes
  - Can we leverage existing datasets to build something cool?

References

- Douglas Engelbart, “Augmenting Human Intellect: A Conceptual Framework”, 1962
- Kim, Jin-Hwa, et al. "CoDraw: Collaborative drawing as a testbed for grounded goal-driven communication." arXiv preprint arXiv:1712.05558 (2017).
- Devi Parikh, AI + Creativity : Early Explorations https://www.youtube.com/watch?v=kkIzhFV9YFE , 2020
- Huang, Forrest, et al. "Scones: towards conversational authoring of sketches." Proceedings of the 25th International Conference on Intelligent User Interfaces. 2020.
- Huang, Forrest, John F. Canny, and Jeffrey Nichols. "Swire: Sketch-based user interface retrieval." Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems. 2019.