

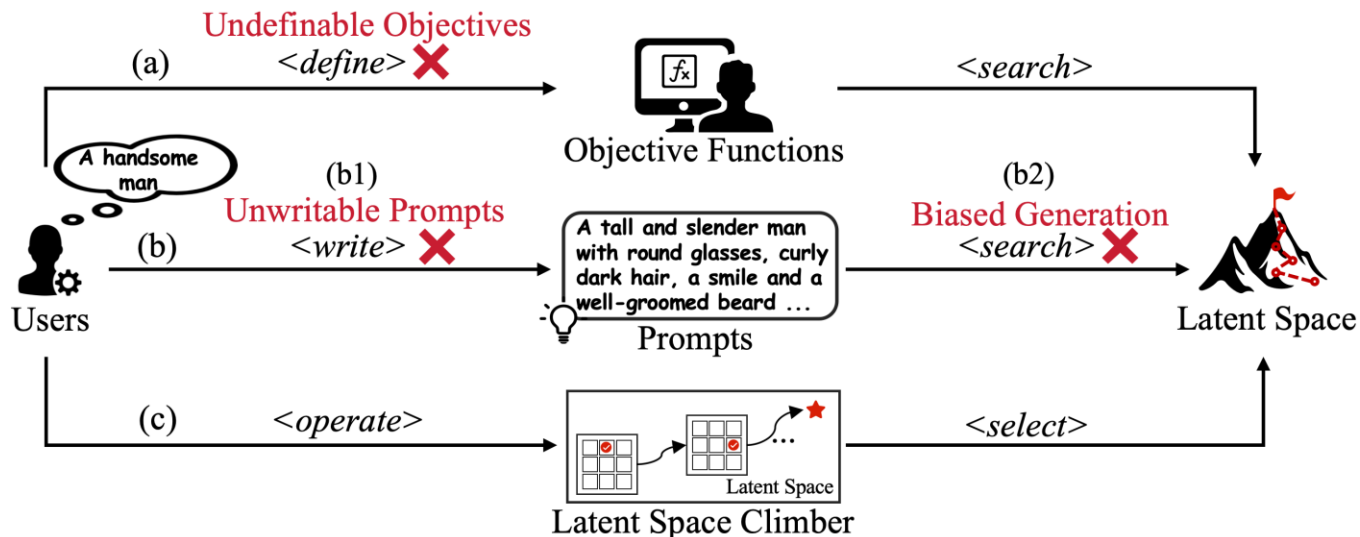
Latent Space Climber: Progressive Latent Space Exploration for Desirable Sample Discovery

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Problems & Ideas

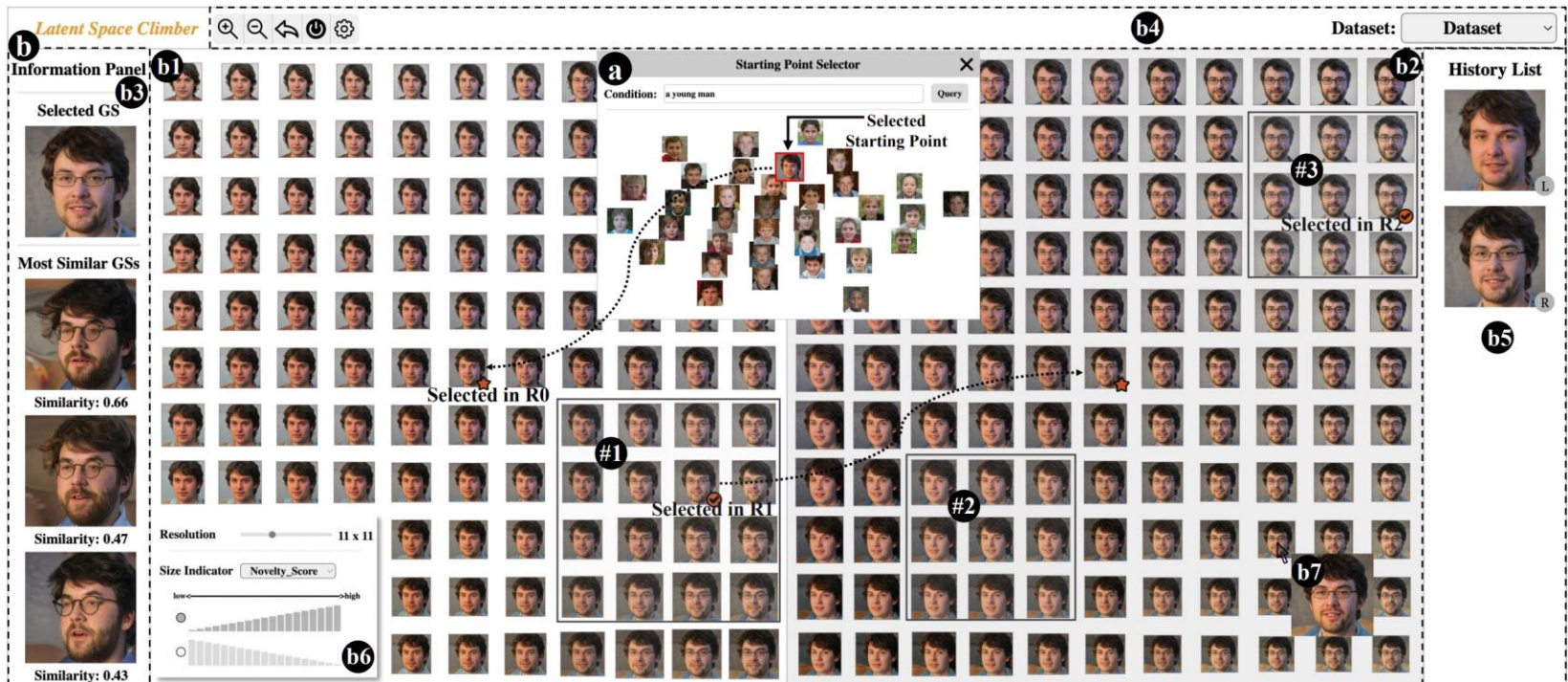
- Problems of existing generative latent space exploration methods to find desirable samples:
 - Objective-based Techniques: Requires explicitly defined quantitative objectives, which are infeasible when user goals are abstract.
 - Prompt-based Techniques: Requires written prompt description, which is infeasible when user goals are specific. Users may not know how to adjust to prompt concretize and refine the goal.
- Ideas: Our approach enable users to progressively concretize and refine their goals through iterative selection from diverse candidates, gradually increasing sample desirability without requiring any pre-defined objectives or prompts.



Explaining our basic idea by comparing three workflows. (a-b) Users define an objective function or write a prompt to search for samples in the latent space. (c) We designed the Latent Space Climber that relies on interactive sample selection to drive exploration.

Main Contributions

- Contributions:
 - A progressive workflow that guides users to discover desirable samples through multiple rounds of neighborhood exploration;
 - A method for collecting samples differing from the neighborhood center in a few features as candidates for user selection;
 - A interactive visualization system that apply the approach in practice;
 - Experiments that prove the effectiveness and usability of the approach.



System interface that consists of two components, i.e., (a) Starting Point Selector and (b) Target Explorer. Target Explorer has two main views, i.e., (b1) Left View and (b2) Right View, and four auxiliary views, i.e., (b3) Information Panel, (b4) Control Panel, (b5) History List, and (b6) Popup Window.