SliceHub: Augmenting Shared 3D Model Repositories with Slicing Results for 3D Printing

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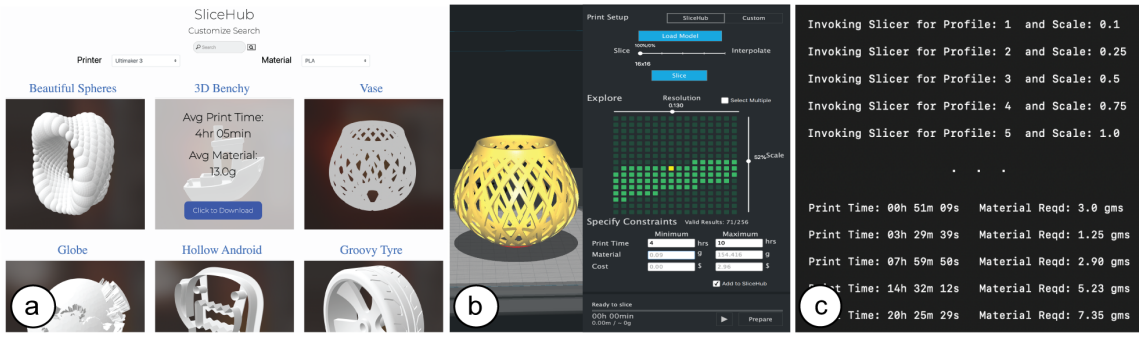

Fig. 1. SliceHub's integrated system: (a) repository with slicing results, (b) user interface for exploring trade-offs between different print resolution profiles and model scales, (c) infrastructure for slicing and interpolation to generate new slicing results.

In this demo, we show how to augment shared 3D model repositories, such as *Thingiverse*, with slicing results that are readily available to all users. Existing slicers slicers process a 3D model for every print configuration before displaying the expected print time and material consumption. Since a single slicing process can take up to several minutes for complex 3D models, it makes the exploration of suitable print resolution profiles and model scales a time-consuming process.

By having print time and material consumption for different print resolution profiles and model scales available in real-time, users can to explore different slicing configurations efficiently to find the one that best fits their time and material constraints. To prototype this idea, we build a system called SliceHub, which consists of three components: (1) a repository with an evolving database of 3D models, for which we store the print time and material consumption for various print resolution profiles and model scales, (2) a user interface integrated into an existing slicer that allows users to explore the slicing information from the 3D models, and (3) a computational infrastructure to quickly generate new slicing results, either through parallel slicing of multiple print resolution profiles and model scales or through interpolation. Together, these components allow users to explore trade-offs between different print resolution profiles and model scales with respect to the print time and material consumption for 3D printing a model.

In our demo, we will show attendees the SliceHub user interface, where they can explore 3D models and compare them based on print times and material requirements.

CCS Concepts: • **Human-centered computing** → **Human computer interaction (HCI)**;

Additional Key Words and Phrases: 3D printing; slicing; online repositories.