CMSC 635

Texture Synthesis
Lapped Textures

- Irregular boundaries not noticed
- Slice irregular region(s) from texture
- Overlap on surface
Setup

• Select irregular texture region
• Specify direction & scale on mesh
Synthesis

- Select random patch $T$
- Select uncovered location $L$
- Grow a surface patch $S$ around $L$ to size of $T$
  - Add polygons to form “polygonal hull”
Optimization

• Adjust parameterization to match surface scale & vector field
  – Sparse least-squares fit

(a) Align only patch center  (b) Align locally to field
Run-time

- Paste patches
- Fill *texture atlas*

(a) Runtime pasting  (b) Rendering with a texture atlas
Examples

Emil Praun, Adam Finkelstein, and Hugues Hoppe, "Lapped Textures," SIGGRAPH 00
Limitations

• Important low-frequency content
• Boundary mismatch
• Singularities