CMSC 635

Texture Synthesis

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Lapped Textures

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

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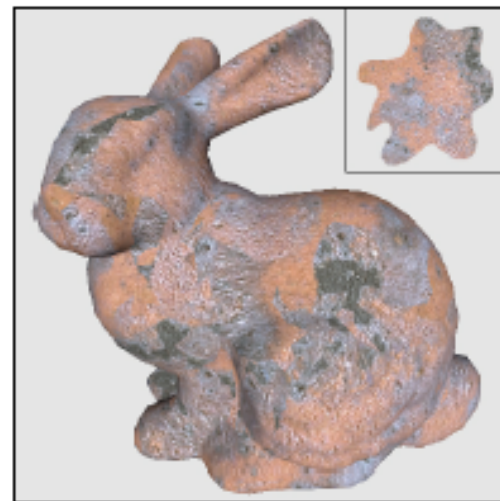
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Setup

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

- Select irregular texture region
- Specifiy direction & scale on mesh
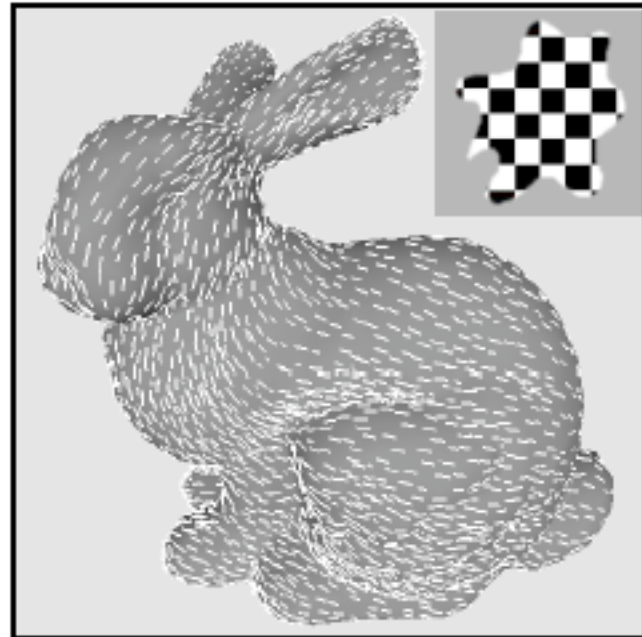
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Synthesis

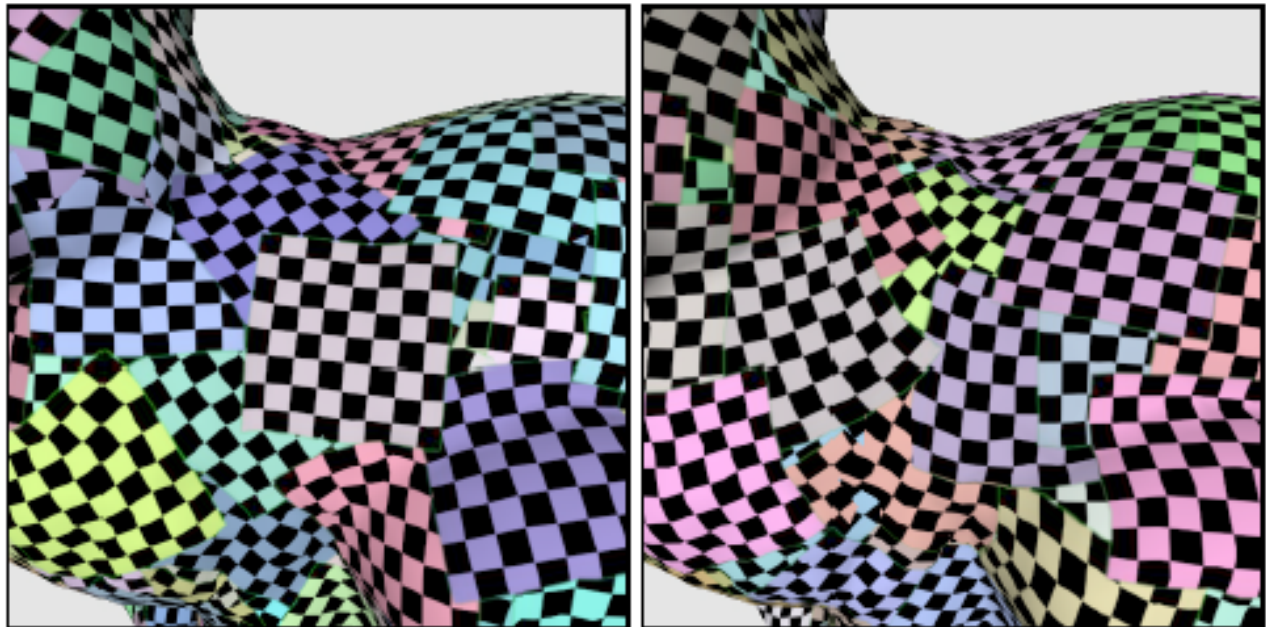Emil Praun, Adam Finkelstein, and Hugues Hoppe, "Lapped Textures," SIGGRAPH 00

- 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

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Adam
Finkelstein, and
Hugues Hoppe,
"Lapped
Textures,"
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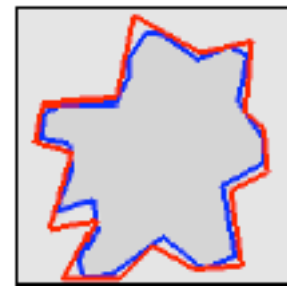
- Adjust parameterization to match surface scale & vector field
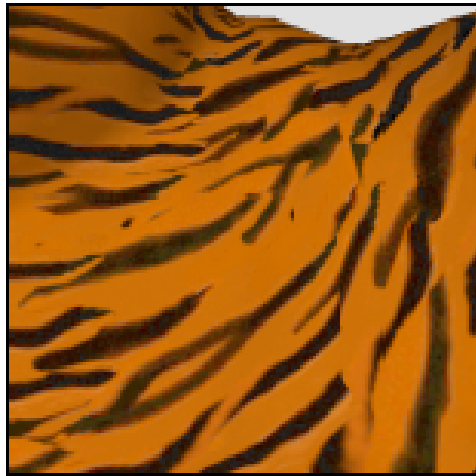 - Sparse least-squares fit

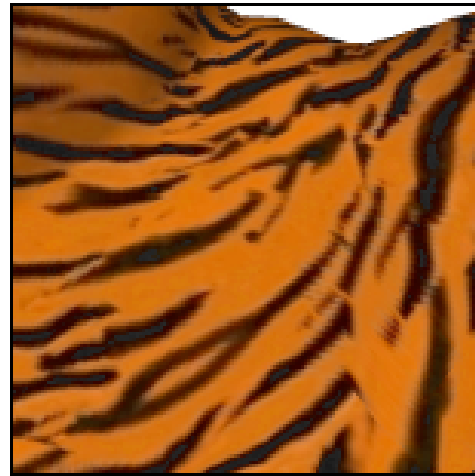(a) Align only patch center   (b) Align locally to field

Run-time

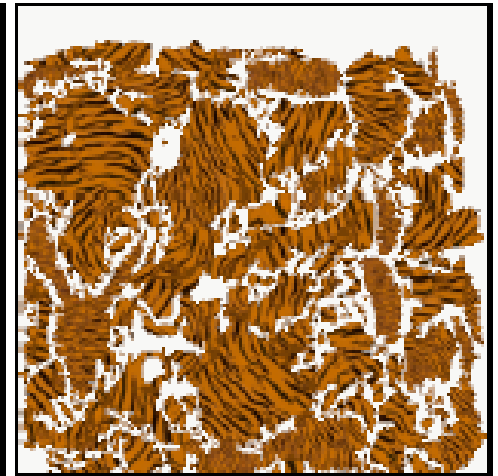Emil Praun, Adam Finkelstein, and Hugues Hoppe, "Lapped Textures," SIGGRAPH 00

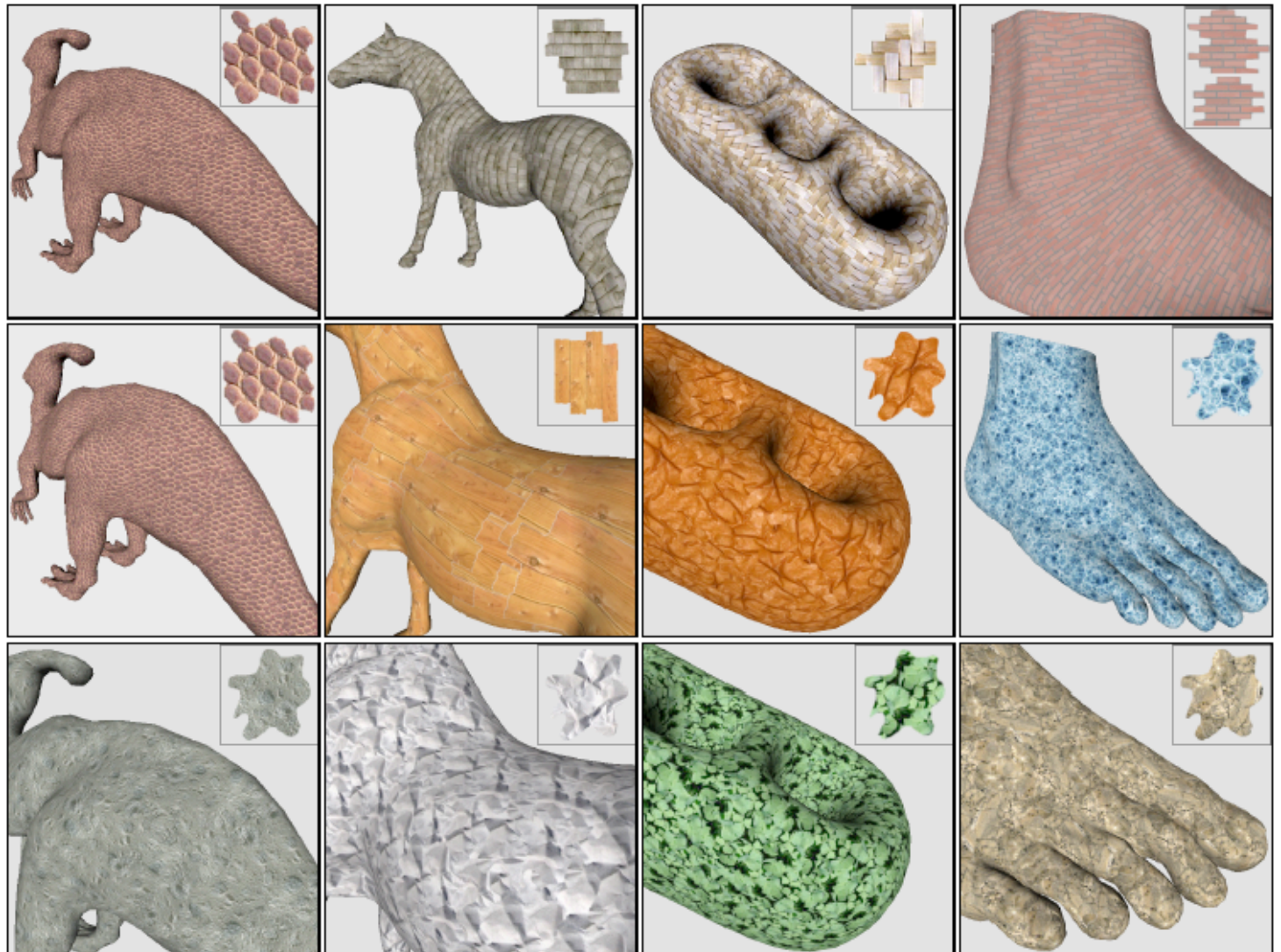- Paste patches
- Fill *texture atlas*

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

Examples

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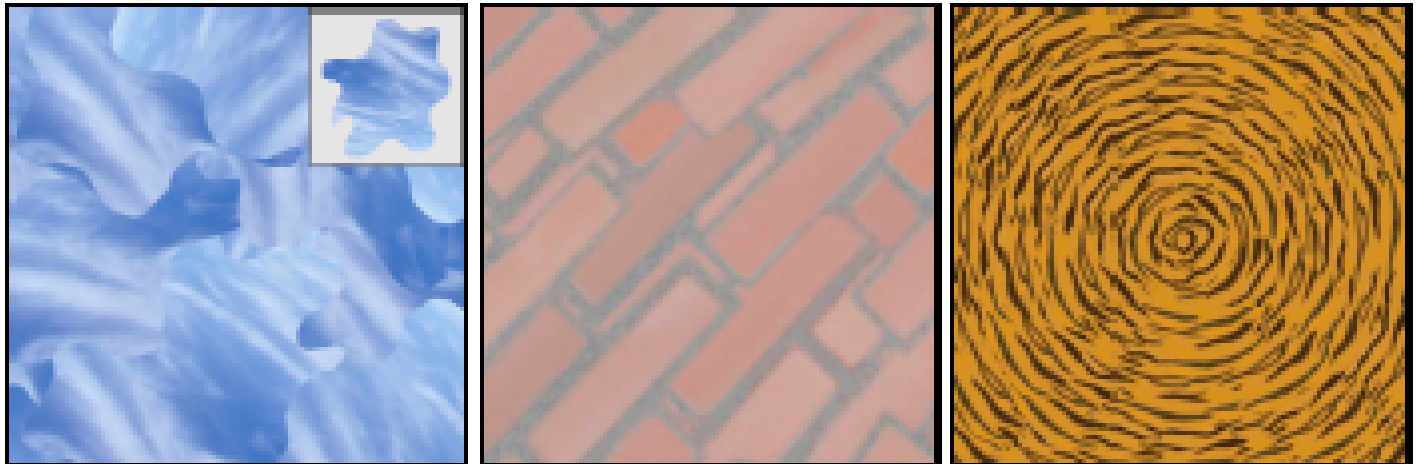Adam
Finkelstein, and
Hugues Hoppe,
"Lapped
Textures,"
SIGGRAPH 00

Limitations

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

- Important low-frequency content
- Boundary mismatch
- Singularities