Understanding Anisotropic Highlights for Interactive Appearance Editing
Boris Raymond, Pascal Barla, Romain Pacanowski, Xavier Granier

To cite this version:
Boris Raymond, Pascal Barla, Romain Pacanowski, Xavier Granier. Understanding Anisotropic Highlights for Interactive Appearance Editing. PRISM2: The science of light & shade, Oct 2013, Bordeaux, France. 2013. hal-00976697

HAL Id: hal-00976697
https://inria.hal.science/hal-00976697
Submitted on 16 Apr 2014

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
Understanding AnisotropicHighlights for Interactive Appearance Editing

Goals
- Understand the shape of anisotropic highlights on arbitrary objects
- Infer local BRDF orientations from user-specified highlight shapes

The shape of anisotropic highlights
Highlight tangent field depends on variations...
... of BRDF orientations (geodesic curvature & splay)
... of surface normals (directional curvature & torsion)
Our non-linear solver optimizes BRDF orientations $\varphi$ to yield the desired highlight tangent field $\ell$

Highlight manipulation tools

Warp tool
Deform the highlight tangent field to deviate trajectories of highlight curves

Light tool
Retrieve a light source given a point/tangent constraint for the highlight curve

Stencil tool
Paint a degenerate highlight region that quickly vanishes when lighting is rotated

Additional results

Top/bottom row: initial/edited highlights. Manipulations are preserved across material changes.

Conclusions
- Provide explicit relations between highlights, lighting and surface properties.
- Future work: investigate relevance of highlight tangent formula to Human Vision.