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Controllable Lighting Model for Designing Digital Panorama Maps in the Style of Novat

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Multi-scale Local Light Alignment

For each detail scale, we move the light at each point of the surface to maximize contrast between both sides of features.

Multi-scale Adjusted Shadows

We compute a set of light directions to compute multi-scale shadows. We control their length to solve masking while aligning shadows with the relief.

Analytical Shading

Whatever the shading model (diffuse, aspect based, global illumination,...) having a single light direction results in masking effects and contrast issues.

Combined Result

Chamounix, Atelier Novat

Our result

Chamonix, Atelier Novat

Our result

Alpe d'Huez, Atelier Novat

Simple colored shading

Val d’Isère-Tignes, Atelier Novat

Simple colored shading

Vol d’Isère-Tignes, Atelier Novat

Simple colored shading

Shadow map with a single light

Two scales (grey and black) adjusted shadows

Lambert diffuse rendering

Our result with Local Light Alignment

To be continued...

Cartographic elements:
- roads,
- trees,
- ski tracks...

References

- A Stylistic Study of the Winter Panorama Maps of Pierre Novat
  Nolan Mestres
  Cartographic Perspectives 2022, 10.14714/CP100.1753
- Local Light Alignment for Multi-Scale Shape Depiction
  Nolan Mestres, Romain Vergne, Camille Noûs, Joëlle Thollot
  Eurographics 2021, 10.1111/cgf.142656