Reaction Report I:
Microgeometry Capture using Elastomeric Sensor

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Identify one idea in the paper that you feel is a major contribution or a major limitation, explain it, and discuss why it is important

The authors contributed to microgeometry capturing by proposing new methods that uses both hardware (silver powder) and software (model can handle both spatially-varying illumination and cast shadows). Previous works focused on capturing special properties of surface or estimating the depth, these are affected dramatically by the materials and will not work in many cases. Thus, I think using silver power particles is an big innovation, this fine powder is extremely smooth in high resolution and can eliminate the noises and the limited reflection caused by metal-flake pigment. Its opaque characteristic also helps to capture fine surface detail while dielectric pigments could be with such thin layers. This method provided a stable solution for different kind of surfaces, better data for the reconstruction algorithm. Furthermore, it opened the potential research on materials made for specific application in vision.

Describe one idea of yours that builds on the paper and expand on that idea as much as possible

Using high resolution image for skin disease detection is becoming more and more popular, traditional this requires large and expensive machines. Given that the authors use both hardware and software to solve the problem of obtain and process images, I propose two research directions. The first is to create a compound that can be absorbed through the skin and will be decay afterwards, such compound will be designed to be detected even through translucent surface such as human skin and could be use to get information inside the body using different wave lengths. For example red wave can go deeper through the skin and return information on the subcutaneous tissue while the blue wave can provide information on the damage of dermis layer. This could be extend to deeper layers inside the body and could be developed to tools such as a mini X-ray machine that would be useful in emergency cases. The second idea is a robust algorithm to reconstruct internal structure from information obtained from the first idea for medical purposes.