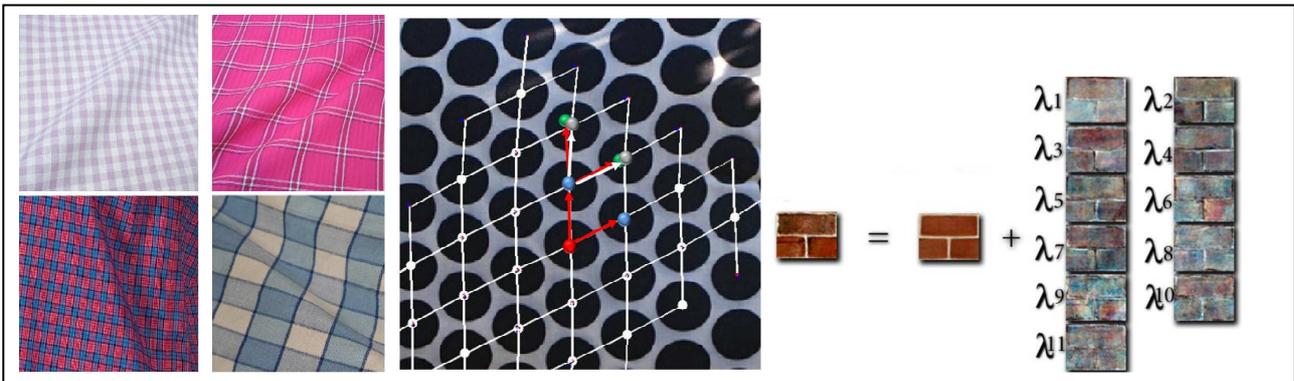# Detection of Deformed Repeated Structures in Texture Images

Description:

Regular textures are ubiquitous in the real world (e.g. cloth, buildings etc). These textures can be constructed by regularly tiling the texture space with the same texture element, often also called texels. The lattice describing the tiling can be represented as a degree-4 graphical model. If a textured and deformed surface is projected into an image, the imaged texture is no longer regular. The texture elements appear geometrically and photometrically distorted in the image due to variations in the viewing angle, lighting conditions and partial occlusions. Nevertheless, they still exhibit the same topological regularities and relations as regular textures. Such textures are often referred to as 'Near Regular Textures. In this thesis, methods for the detection and localization of repeated structures and their topology in an image should be developed. Furthermore, an appearance model of the repeated texture element should be developed.

The developed methods should be implemented in MATLAB or C++ and evaluated on real images.

Literature:

HAYS J. H., LEORDEANU M., EFROS A. A., LIU Y.: Discovering texture regularity as a higher-order correspondence problem. In Proc. ECCV2006, Graz, Austria, May 2006.

PARK M., BROCKLEHURST K., COLLINS R., LIU Y.: Deformed Lattice Detection in Real-World Images using Mean-Shift Belief Propagation. IEEE TPAMI, Special Issue on Probabilistic Graphical Models 31, 1, 2009.

Anforderungen:

- Hervorragende Kenntnisse und praktische Erfahrung in Matlab und/oder C++
- Kenntnisse in Computer Vision, Bildverarbeitung, Computergraphik sind von Vorteil
- Solide Kenntnisse in angewandter Mathematik

Bewerbung und/oder Fragen bitte an:

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