

SONY



Sony manufactures audio, video, communications, and information technology products for the global consumer and professional markets. With its music, pictures, games and online businesses Sony is uniquely positioned to become a leading personal broadband network company in the 21st century. Sony's European electronics operations cover a full range of activities from R&D, design, engineering and manufacturing to marketing, sales and service.

The **Stuttgart Technology Center** is where innovations and future generations of products are being developed to meet the requirements and needs of the worldwide markets and customers.

Our **Sensing Systems Laboratory (SSL)** concentrates on the corporate Research and Development of core device technologies, systems concept and algorithms related to future novel sensing systems.

Master Thesis / Student work

Adaptive Reconstruction of Radiometric Images

Electromagnetic waves are emitted naturally by objects. The power levels of these waves depend on many factors like temperature, reflectivity, emissivity of the object and the frequency at which the waves are captured. This makes it possible to distinguish different objects and enables the application of radiometric imaging in many fields like robotics, biomedicine and security. However, the signal to noise ratio in radiometric images is very low; a fact that makes the image reconstruction a very challenging task.

The goal of this thesis/work is to develop a new technique for radiometric image reconstruction. The idea is to deal with the reconstruction as an optimization problem where some constraints have to be taken into account when forming the image. The algorithm has then to be evaluated using the radiometer available at SSL.

This work is conducted in SONY's European R&D centre in Stuttgart/Germany.

Tasks

- Study of the principles of image reconstruction in radiometric imaging.
- Derive the new reconstruction algorithm based on constrained optimization.
- Develop the algorithm using Matlab/C.
- Verify the algorithm using the measurements taken with the radiometer at SSL.

Skills required

- Basic understanding of image processing and optimization techniques.
- Some knowledge of Matlab/C.
- Self-motivation and ability to learn and apply knowledge in new area of technology.

Administrative:

Project duration: up to 6 months
Starting date: March 2010
Support: Sony SSL
Supervision: R&D Engineer from SONY

Contact:

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