
Preface

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3D object recognition forms a ubiquitous problem in modern image analysis systems. Applications can be found in a broad range of domains such as automatic robot navigation, automotive driver assistance systems, biometrical face recognition and medical assistance systems aiding in sophisticated surgeries.

Usually, depth information of a scene is obtained by exploiting specific sensor systems tailored for this purpose. Among the classic sensor types, in this field one can choose between ultra sonic sensors, radar, laser scanners and stereo camera systems. All these systems inhabit specific characteristics regarding precision and reliability of the provided depth measurements and runtime behaviour. Usually, tradeoffs between accuracy and real time constraints have to be made. A few years ago, a new sensor type has arisen addressing this problem: the time of flight cameras.

Time of flight cameras provide regular intensity images and corresponding depth information at high accuracy in real time. These cameras send out a light pulse, which is transmitted by a sender unit and the target distance is measured by determining the turn-around time the pulse needs to travel from the sender to the target and back to the receiver. The advantage over common laser scanners is the ability to measure the targets distances of a scene all at once in contrast to scanning every point of the target successively at a certain resolution. Hence, time of flight cameras are very appealing for scenarios, which inhere hard real time constraints. One of these camera types is the PMD camera developed at the ZESS institute of the University Siegen.

Nowadays, the PMD technology forms an active research field in sensor development and real time object recognition. It has become clear, that the PMD camera, yet invented just a few years ago, already enqueues itself as a new member to the list of the above-mentioned classic sensor types. More interesting and appealing inventions in this area are very likely to be expected in the near future. This was the reason to organise this

workshop: to provide a cross section of current PMD research and applications in 3D object recognition exploiting this new technology.

The response to this workshop was greater than initially expected. It appears that a lot of research groups all over the world conduct research on the PMD technology. We were happy to see how many of them submitted high quality papers to our workshop. We would like to thank all the participants for their contribution to this workshop. Special thanks also go to the organisation committee and all the reviewers.