**Details of FAPESP Research Grant**

Title:
Face images, feature extraction and pattern recognition: Computational methods to assess neonatal procedural pain

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Abstract:
More than 500 painful interventions are carried out during the hospitalization of a newborn baby in an intensive medical care unit. In these situations, there is, however, a challenging difficulty to identify pain, owing to the unlikeliness of direct and objective verbal communication commonly used among adults. Over the last decades, research on pain assessment has allowed the investigation and development of non-invasive approaches to automatic monitoring neonates subjected to painful procedures related to daily care management. In this context, changes on facial movements and expression have provided relevant scientific information and clinical significance for not only describing the presence of the pain itself perceived by the newborns, but also their emotional status. The aim of this research project is to develop a computational framework to interpreting and recognizing patterns on face images for automatic assessment of neonatal procedural pain. More specifically, our goal will focus on the investigation, implementation and combination of face image detection, segmentation, registration and classification techniques based on information extracted by data mining and human cognitive perception. The newborn face database has been developed by a national research group expert on this issue that jointly composes the research team of this project. We believe that such investigation might provide a general computational processing suitable to understanding the relation between neonatal facial movements and procedural pain and, consequently, helping health professionals in the corresponding clinical practice.