



Equipe MediCIS

LTSI UMR U1099 • INSERM/Université de Rennes I

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Research Internship: Impact of surgical team motion on emotional mother feeling during C-section.

Localization: Laboratoire Traitement du Signal et de l'Image (LTSI), MediCIS Team, Université de Rennes, Rennes, France

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Context

Cesarean section (C-section) represented 21% of births [1]. It can be a traumatic experience, with an estimated 9% rate of post-traumatic syndrome and 17% of post-partum depression [2]. Moreover, even if it's a common and safe practice, the study of the non-technical skills of healthcare professionals and the operating room environment is still very limited.

In a previous study, we compared the birthing experience of 29 patients after an emergency C-section, compared with the experience of 15 patients receiving a planned C-section. In addition, we tried to correlate the surgical team's movement to the type of C-section. For each C-section, we have collected the mothers feeling thanks to validated scores such as QACE (Questionnaire Assessing the Childbirth Experience) [3] and the video of the operation thanks to an RGBD camera.

While statistical differences have been retrieved concerning the mother birthing experience, we will not be able to find a correlation with the surgical team's movement. We hypothesize that was due to too a global analysis of the video optical flow with a simple method and without taking into account differences between foreground and background.

Objective of the internship

The goal of the internship is to use the newest deep learning methods to perform local optical flow analysis and correlate the result with the birthing experience and the type of C-section.

To achieve this goal, the internship will be divided into multiple steps:

- Segmentation of the scene in different zones according to the deep information;
- Compute the quantity of movement globally and by zone;
- Correlation between quantity of movement and emotional mother feeling.

Profile researched

The candidate must have knowledge in image/signal processing, computer science, and programming (python). Having a background in deep learning is a plus. The working language for this internship will be French and English.

Duration: 5 to 6 months

Salary or allowance: Standard internship allowances

[1] H. Cinelli, *et.al.* Enquête nationale périnatale. Rapport 2021. Les naissances, le suivi à deux mois et les établissements. (2022) <https://www.santepubliquefrance.fr/docs/enquete-nationale-perinatale.-rapport-2021.-les-naissances-le-suivi-a-deux-mois-et-les-etablissements>

[2] A. Froeliger, *et.al.* Posttraumatic stress disorder 2 months after cesarean delivery: a multicenter prospective study. AJOG (2024) <https://doi.org/10.1016/j.ajog.2024.03.011>

[3] M. Chabbert, *et.al.* Validation de l'échelle d'évaluation du vécu de l'accouchement (QEVA) auprès d'une population française. L'Encéphale, 47, 326-333 (2021) <https://doi.org/10.1016/j.encep.2020.06.016>