



Knowledge In Medical Imaging (KIMI)

Cédric Dumas, Fabien Picarougne, Hoel Le Capitaine, Emmanuel Codron

► **To cite this version:**

Cédric Dumas, Fabien Picarougne, Hoel Le Capitaine, Emmanuel Codron. Knowledge In Medical Imaging (KIMI). Journée IHM & Santé, May 2019, Metz, France. hal-02262429

HAL Id: hal-02262429

<https://hal.univ-lorraine.fr/hal-02262429>

Submitted on 20 Aug 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



IMT Atlantique
Bretagne-Pays de la Loire
École Mines-Télécom

New Medical Technology Challenges

Human factors approach for Medical Skills training – the NBI case

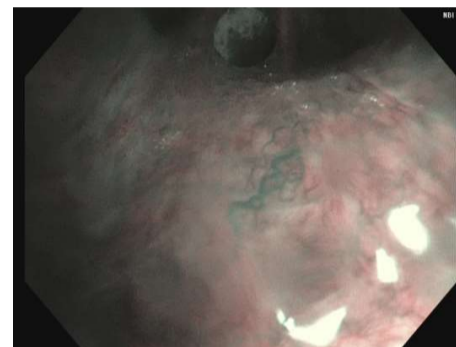
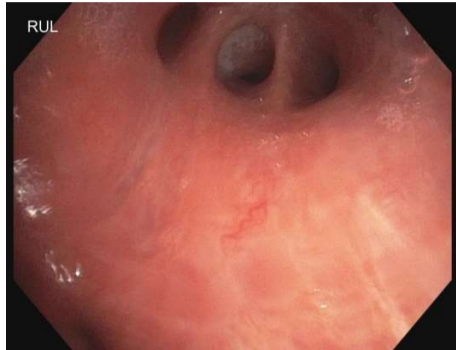
Parties prenantes



Auteurs

Cédric DUMAS

Partenaires



Evolution of Endoscopy

- ▶ **Narrow Band Imaging (NBI)** – New endoscopic technologies have dramatically improved the technical performance of surgical procedures.
- ▶ **Endoscopes spread across hospital departments** – Where open surgery and traditional literature provide teaching from an external view, endoscopes provide a completely different internal perspective of human anatomy.
- ▶ **Diagnostics shift** – high quality images of endoscopes (resolution, luminance, filters) challenges doctors' anatomical and diagnostic knowledge.
- ▶ **New technics involve new training** – short focal distance camera with narrow band imaging (NBI), ultrasound or auto fluorescence techniques

Case Study: NBI training using online interactive Medical Images Quiz (MedImq)

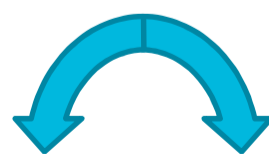
- ▶ The tool allows trainees to directly mark up medical images to show where they would biopsy. It features a “biopsy size” visual marking tool for the trainees.
- ▶ The sensitivity and the specificity of the trainees' answers was compared to the experts, who have answered the test before the training sessions.
- ▶ 38 participants over two years.
- ▶ Pre-test, Post-test and Follow-up test during NBI courses.
- ▶ overall class average normalized gain of 32% shows MedImq can be used to improve trainees' competency in analyzing NBI Images during a training course.
- ▶ Need to follow and mentor the trainees after the training course.



sharing Knowledge In Medical Imaging (KIMI)



- ▶ Knowledge sharing
- ▶ Building deep learning approaches to extract information from experts discussions
- ▶ Physicians Community based approach (Forum, Crowded sourcing, Q&A)
- ▶ Follow-up to an existing training
- ▶ Promote experts



Interaction + Knowledge approach

Training / Mentoring
Q & A
Human Knowledge sharing
Crowdsourcing

Images segmentation
Taxonomy
Processing text together with images
Building new Knowledge (or relations)

Contact : cedric.dumas@imt-atlantique.fr