# EmSe: Supporting Children's Information Needs within a Hospital Environment

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**Abstract.** The Emma Search (EmSe) demonstrator developed for the Emma Children's Hospital showcases the PuppyIR project and PuppyIR framework for building information services for children.

## 1  Introduction

For children, illness and other medical conditions can be very confusing and frightening. Children faced with these will often express an interest in learning about their medical conditions, what is happening, and what to expect. However, finding information related to medical conditions is often a difficult and sensitive task, so designing and developing search services for children presents a number of challenges, including: children's problems expressing information needs, finding and crucially identifying relevant information, and ensuring that information is understandable, appropriate, and sensitive to the child's physical and emotional state. To address these, we developed the Emma Search (EmSe) engine for Emma Kinderziekenhuis (EKZ) at the Amsterdam Medical Centre[1]. The goal of the EmSe service is to improve the accessibility and services of the Patient Information Centre (PIC) by:

1. providing an engaging interface that encourages children to explore and learn
2. improving the understandability of the content, and,
3. enabling moderated and trusted web and medical site search services.

To this end, we developed and integrated a series of related search applications that were designed for children aged 8-12 years. These services are accessible to patients via bedside computers and the PIC, and to outpatients via the web.

## 2  The EmSe Service

**EmSe** is built using the PuppyIR Framework [3], which provides a suite of components that can be combined to build child-specific search services. Component types range from interfaces to various search resources (e.g., Bing, YouTube,

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[1] http://www.emmakids.nl/

Twitter) to a collection of information processing components that filter and modify both queries and results to support the user and their search tasks. Fundamentally, EmSe enables searching trusted medial sites as well as the web, over which the following services are built:

1. The **Body Browser** enables exploration of the dataset via an interactive illustration of a body, where users can zoom to various levels of detail from the entire body to specific organs [2], which triggers medical web searches related to the body parts and organs in focus.
2. The **Query moderation** identifies and enhances queries that are unlikely to be child-oriented by applying simple, real-time technology [4]. The focus is not explicitly to remove mature content, but rather to help make results to general queries more child-friendly.
3. **Query Suggestion**s help children explore and query the recommended and related medical sites by providing suggestions that reflect the specific content on these sites. They are generated by extracting meaningful phrases from the anchor text of the recommended resources.
4. **Content Simplification** helps children understand difficult medical jargon. Instead of *a priori* rejecting difficult content, as suggested by previous work [1], requested pages are checked for difficult terms, which the system augments with brief definitions from external sources such as Wiktionary.

**Evaluation.** The first version is due to be released at the beginning of 2012, where it will be accessible to staff and patients within the hospital (via bedside and other terminals in the hospital), and also out-patients via the web. The planned evaluation will consist of two main stages. The first stage will be to obtain feedback from the staff at the hospital. From this initial evaluation we will then refine the demonstrator to incorporate suggested changes. The next stage will be patient focused, where we will actively solicit feedback from patients, parents and visitors to the hospital. These two evaluations will use questionnaires to illicit feedback from users along with implicit logging to determine how, and how often, the system is being used.

The hospital demonstrator is currently hosted at: `http://www.dcs.gla.ac.uk/access/emse/` and the demonstrator code (along with the PuppyIR framework) can be downloaded via sourceforge at: `http://sourceforge.net/projects/puppyir/`.

# References

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