



# Intelligent Assistance for Emergency Medical Response

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## 1. Motivation and Objective

- ❖ Emergency medical first responders and firefighters have to process substantial amount of data at the incident scene
- ❖ Challenges of Information Processing  
Cognitive overload, multi-tasking, stress, life-critical decision

## 2. Wearable Intelligent Assistant

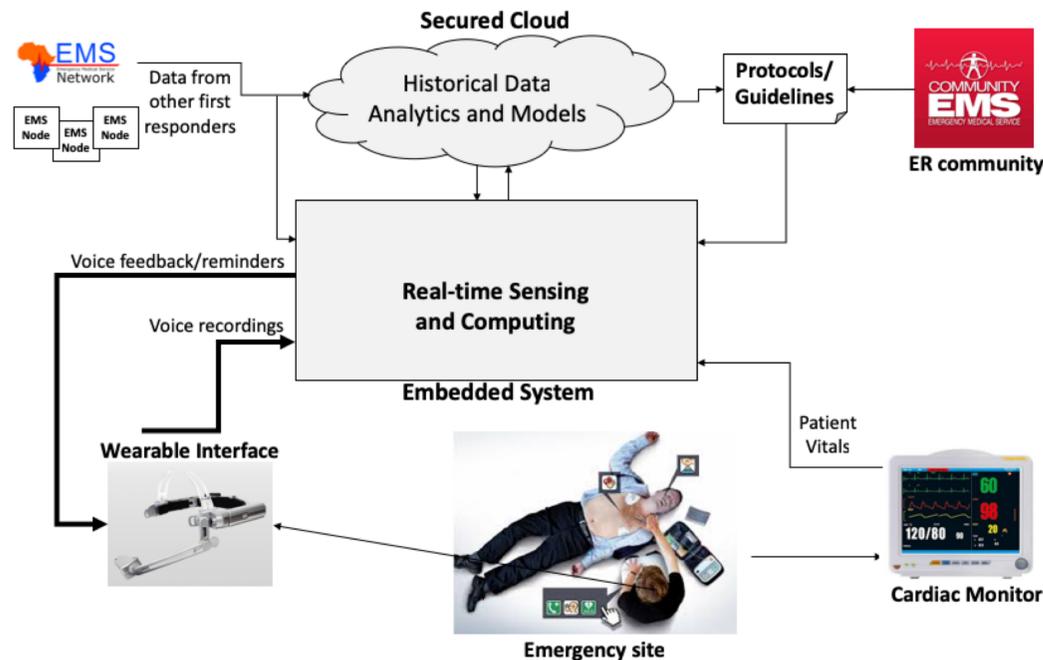


Figure 1: Overview of Dataflow in the Intelligent Assistant

## 3. Solution: Real-time Information Extraction and Fusion

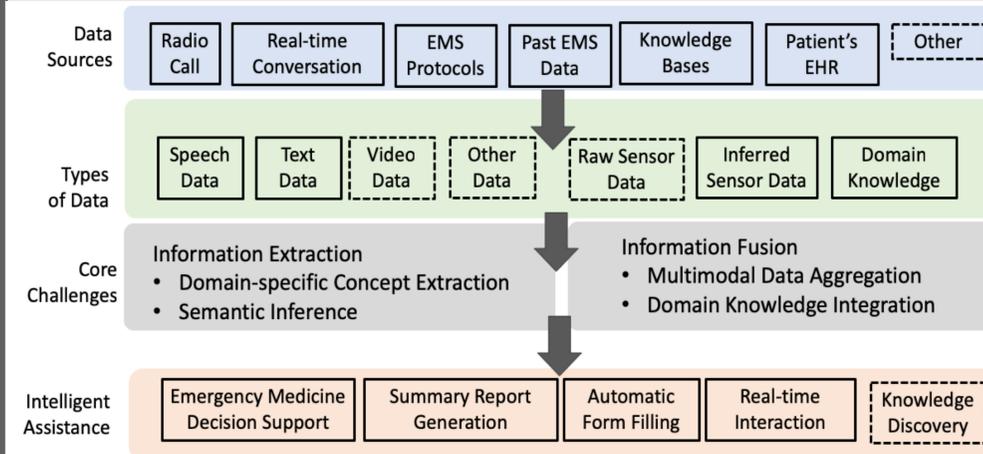


Figure 2: Overview of Information Extraction and Fusion

### Weakly supervised information extraction

- Utilize limited training data
- Robust to resource constraints

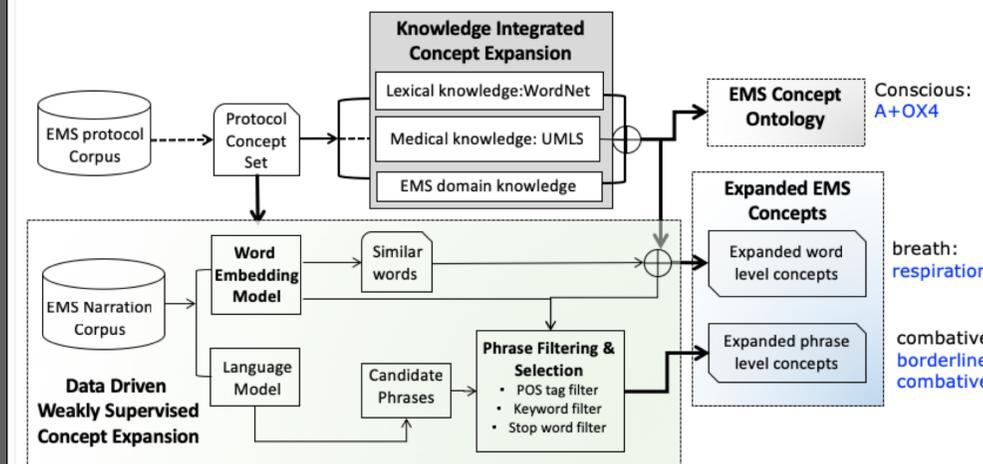
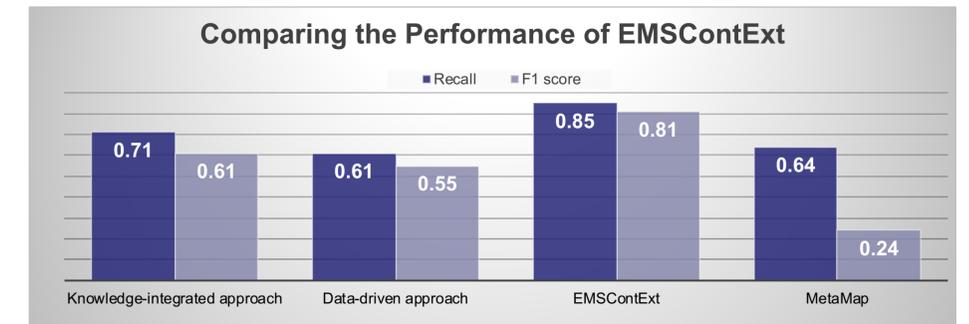


Figure 3: EMSContExt: Weakly Supervised, Data-driven, Knowledge-Integrated Concept Extraction

## 4. Results

- EMSContExt outperforms MetaMap for information extraction
- The state-of-the-art medical concept extraction tool from NLM
  - 33% higher recall and 3 times higher F1 score



### EMSContExt outperforms MetaMap for protocol and intervention selection

- 22% higher recall and 20% higher F1 score
- Reduces execution time by 6 times

