



Personalized Medicine through Automatic Extraction of Information from Medical Texts

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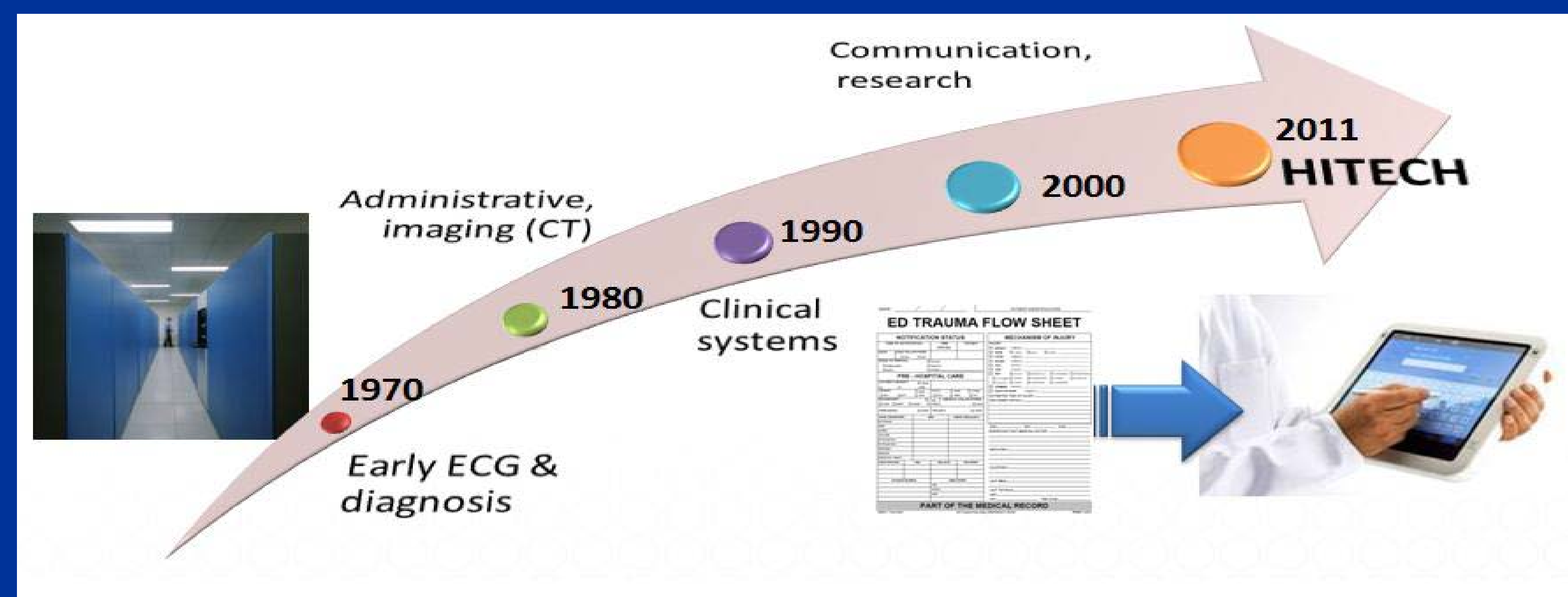
Research Goal: provide automatic solutions for identifying and extracting relevant bio-medical information for the implementation of a computerized **Personalized Medicine (PM)**.

Objective 1: automatically identify disease-presence in clinical data;

Objective 2: identify relevant published articles for building systematic reviews (SR);

Objective 3: predict functional properties of the genes by only using biomedical texts;

Objective 4: identify relations between medical entities.



Motivation

textual data is the most representative medical data types and the main means of communicating formal information .

Methodology

➤ Implementation and use of **Natural Language Processing (NLP)** and **Machine Learning (ML)** techniques.

Achievable Results

Results for the four objectives	
Disease Identification	66% - 97% (Accuracy)
Building Systematic Reviews	67% - 99 % (Recall)
Functional Genomics	32% - 60% (F-measure)
Identify and Classify Semantic Relations	47%- 51% (F-measure)

Overview of obtained results.

Contributions

- built solutions for medical-related tasks that help humans deal with **large amounts of data**.
- proposed solutions for representative tasks that deal with textual medical data.
- used and integrated knowledge about the domain and tasks.

Conclusions and Future Work

- NLP and ML can help solve problems that can facilitate the implementation of a **computer-assisted PM**.
- there is no such thing as **“one-size-fits-all”**.
- Integration of all objectives.
- The use of other types of medical data and other technologies.
- Predict patient outcome.

