UNIVERSITY OF ILLINOIS

Efficient Population of Structured Data Forms Using Syntactic Constraints and Intermediate Text

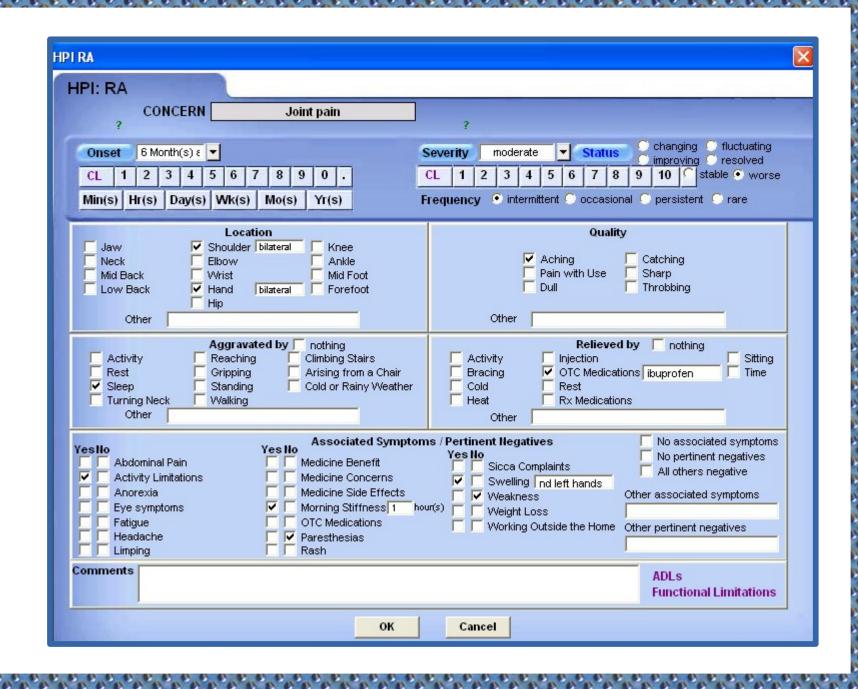




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Filling Forms

- Major Frustration of EHR/EMR?
- Mayo Clinic Proceedings July 2016:
 - "Clerical burden and burnout in US physicians"
- GUI 2d layout mixes concerns:
- 1. display of data
- 2. acquisition of data



Information Flow

- Elements found / decided out-of-order / Sometimes different pages & screens
- Doctors should not have to wait / Do not like to wait
- Source of error / Incomplete documentation

Mouse Movement & Selection

- CCF SemanticDB outcomes reporting Bottleneck
- Mouse-to-Keyboard-to-Mouse is for Novices
- Minimized mouse movement, resized targets
- Scribes / Docs are experts, need Expert Modes

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Auto-Generated Shortcuts

AGE DATE OF BIRTH (MM/DD/YY) DATE OF ADMISSION (MM/DD/YY) SSN (NNN-NN-NNNN)	AGE (a) DATE OF BIRTH (MM/DD/YY) (do) DATE OF ADMISSION (MM/DD/YY) (da) SSN (NNN-NN-NNNN) (s)
CARDIOMYOPATHY ○ No ○ Yes, Ischemic ○ Yes, Non-Ischemic HEART FAILURE w/in 2 WEEKS ○ No ○ Yes NYHA CLASS w/in 2 WEEKS CLASS I ▼	CARDIOMYOPATHY ○ No (cmn) ○ Yes, Ischemic (cmyi) ○ Yes, Non-Ischemic (cmyn) HEART FAILURE w/in 2 WEEKS ○ No (hfn) ○ Yes (hfy) NYHA CLASS w/in 2 WEEKS CLASS I (CLI) (NYCI) ▼
Submit	Submit

Syntactic Matching

- Nothing else matches NNN-NN-NNNN but Social Security Number
- Where there are two dates, MM/DD/YY
 - 1. Define priority or
 - 2. Require explicit shorthand

	IRTH (MM/DD/YY) (do)
	.DMISSION (MM/DD/YY) (da) NN-NNNN) 345-67-1111 (s)
HEART FA	YOPATHY No (cmn) Yes, Ischemic (cmyi) Yes, Non-Ischemic (cmyn) ILURE w/in 2 WEEKS No (hfn) Yes (hfy) ISS w/in 2 WEEKS CLASS II (CLII) (NYCII)
Submit	345-67-1111 cmn CLII

Conclusions

- Efficient in a real-time documentation setting
- Pridges the gap between natural language extraction and keyboard shortcuts
- Future statistical and database hinting
- EHR vendors should have this kind of R & D