



LabVis: Interactive Visualization of Medical Laboratory Results

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CPSC 533 Project Update
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Motivating Scenario

- You're a new medical intern
- A patient complains of fatigue, headaches, and muscle pain
- Need to analyze the laboratory results to aid in your diagnosis



"Dammit, Adam! I'm a doctor, not a computer scientist!"

Motivating Scenario

Patient: 17560		DUCK		RONALD		Clinical Software Solutions			
DOB: 07/10/48		Age: 51		Sex: M		219 South Pk. Street			
Category:		Facility:		Room:		Cherbury, A.C. 10020			
Physician: E.L. ETHAND, M.D.		Phone:				(800)570-0474vc (480)940-1811vc			
Test	Range	Units	Result	Result	Result	Result	Result	Result	Result
Cumulative									
CA	9.5-10.4	ng/dl					10.5	0.0	
PHOS	2.4-4.2	mg/dl							
GLUC	64-112	mg/dl					111	0	
BUN	7.0-19	mg/dl					18	0	
CREA	0.7-1.4	mg/dl					1.1	1.1	
URIC	2.2-8.4	mg/dl							
TP	6.0-8.2	g/dl					6.0	0.0	
ALB	3.7-5.2	g/dl					5.0	0.0	
TBL	0.1-1.2	ng/dl					1.1	0.0	
ALP	53-128	U/L					120	0	
LDH	100-220	U/L							
AST	9-34	U/L					33	0	
ALT	5-37	U/L							
TSH	0.3-4	U/L					0.13	0.15	
FT4	12-21	U/L					23	23	

Project Goals

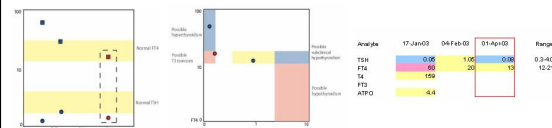
- To develop an effective visualization for displaying and interacting with medical laboratory results
- Evaluate the visualizations using real medical interns

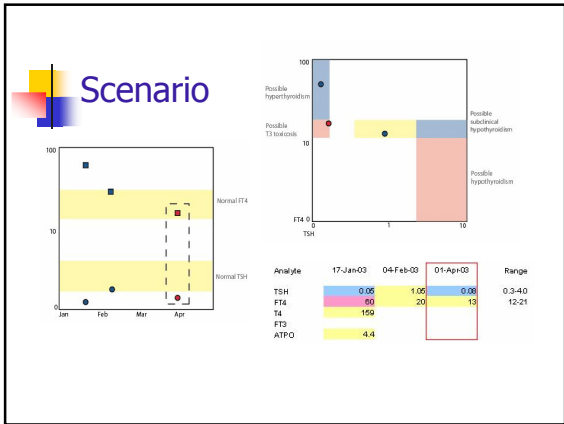
Background

- For medical interns, the challenge of interpreting appropriate laboratory tests can be enormous (Schreiber, 2004)
- Target dataset is a time-series of approximately 1500 thyroid function tests
 - Common analytes reported are FT4 and TSH

InfoVis Solution

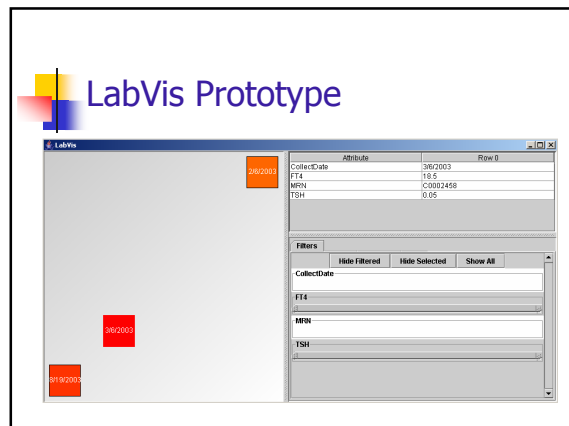
- Provide the intern with an overview of patient tests over time, while supporting details-on-demand interaction






- ## Technical Solution
- Programming: Java/Swing
 - Visualization: InfoVis toolkit
 - Scatterplot, time series drawing facilities
 - Rich interaction API
 - Data source: CSV files
 - For easy export from Excel

- ## Current Status
- Dr. Schreiber's feedback
 - Linked visualization effective
 - Remove extraneous colour-coding
 - Need consistent highlighting of normal/abnormal ranges
 - Built prototype using InfoVis Toolkit



- ## Summary
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- LabVis: rapid, effective visualization and interpretation of medical laboratory test results