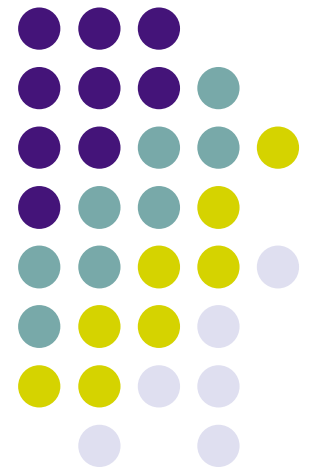




# Visualizing Collaborative Data Entry Forms

Kuang Chen & Heather Dolan



# Data quality is very important



 **National Aids Control Programme**   
**CTC2 Database**

The United Republic of Tanzania

Home  
Log off  
Exit Database


**Patient Registration**

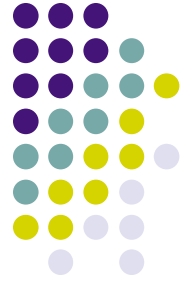
Register new patient   Search patients   Show all patients   Delete patient

Patient ID:	<input type="text"/>	Region:	<input type="text"/>	Household Head:	<input type="text"/>
File Reference:	<input type="text"/>	District:	<input type="text"/>	(Mkuu wa Kaya)	
First Name(s):	<input type="text"/>	Division:	<input type="text"/>	Household Head	<input type="text"/>
Surname:	<input type="text"/>	(Tarafa)		contact details:	
Sex:	<input type="text"/>	Ward:	<input type="text"/>	Helper / treatment supporter:	<input type="text"/>
Date of Birth:	<input type="text"/>	(Kata)		(Jina la Msaidizi wa karibu)	
Age:	<input type="text"/>	Village / Mtaa:	<input type="text"/>	Helper / treatment supporter	<input type="text"/>
Marital Status:	<input type="text"/>	(Mtaa au Kijiji)		contact details:	
Phone/contact details:	<input type="text"/>	Chairperson:	<input type="text"/>	Community Support	<input type="text"/>
Date of first positive HIV test:	<input type="text"/>	(Mwenyekiti wa Kijiji)		Organisation / Group:	
Date confirmed HIV positive:	<input type="text"/>	Ten Cell Leader:	<input type="text"/>	Drug Allergies:	<input type="text"/>
Referred from:	<input type="text"/>	(Mjumbe/Balazi)		Prior Exposure:	<input type="text"/>
		Ten Cell	<input type="text"/>	Notes:	<input type="text"/>
		LeaderContact:	<input type="text"/>		

Add / Edit Village or chairperson

Patent classification  
Family information

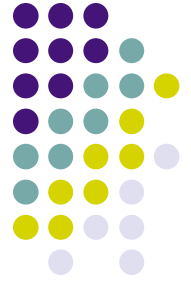
Return 



# The Data Entry problem

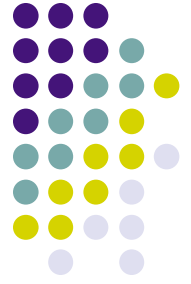
- Data entry is the first opportunity to address data quality
- Form design is often an ad hoc process
- New entry modalities {web, mobile, touch-screen} require customization

# Automatic Form Generation



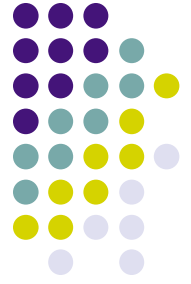
- Given set of form fields and sample values
- Want “black box” form generator to give
  - Question ordering
  - Widget choice
  - Widget “decorations”

# Collaborative Design & Entry



- Allow users to comment on each form field
  - For design feedback: “This field should come later”
  - For data entry comment: “There is a smear, I think this is the correct value”
- Aggregate previous comments per field
- Show based on time or relevance

# Visualizing Collaborative Data Entry Forms



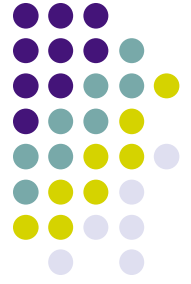
- Algorithm for dynamic layout and pagination
  - Consider questions + widgets + “decorations” + comments
  - On web, mobile, touch-screen interfaces

# Visualizing Collaborative Data Entry Forms, cont.



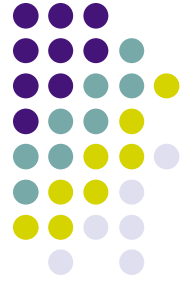
- How to represent “risk” of a current value
  - Example:
    - What is your gender? **M / F**
    - Are you pregnant? **Yes / No**
- How to represent prior values?
  - Example 1
    - M (50%) - F (50%)
  - Example 2
    - Given Gender = M
    - Pregnant (1%), Not Pregnant (99%)

# Widget decorations!



- Type-ahead
- Audio signal
- Screen flash
- Pop-up warning
- On/off tabbing between fields
- Label color, size, position
- Alignment, i.e. differently-justify at-risk data
- On/off edit-ability
- Background color
- Entered data color, font, size
- Default values
- Show prior entries
- Prior entry statistics
- Sparkline visualizations





# Milestones

- Generate form from XML specification
- Design “decorations” for form widgets
- Build decorations
- Design layout algorithm
- Implement algorithm
- Visualize Tanzania AIDS treatment forms
- Simple evaluation
- Write-up

# Related Work

<http://vis.berkeley.edu/courses/cs294-10-fa08/wiki/index.php/FP-KuangChen>

