IT 351 Human Computer Interaction
Lab 6 – Tree Census Application (Web + Mobile UI)

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Design and create two different user interfaces (web/ mobile) for entering field observation data for the forest tree census application: Date and time of observation, tree name ,tree type, GPS location and measurements need to be entered to a web application and mobile application. Critique on both user interfaces taking into account the design and general UI principles and also evaluate the time efficiency of two different user interfaces (assuming expert users).

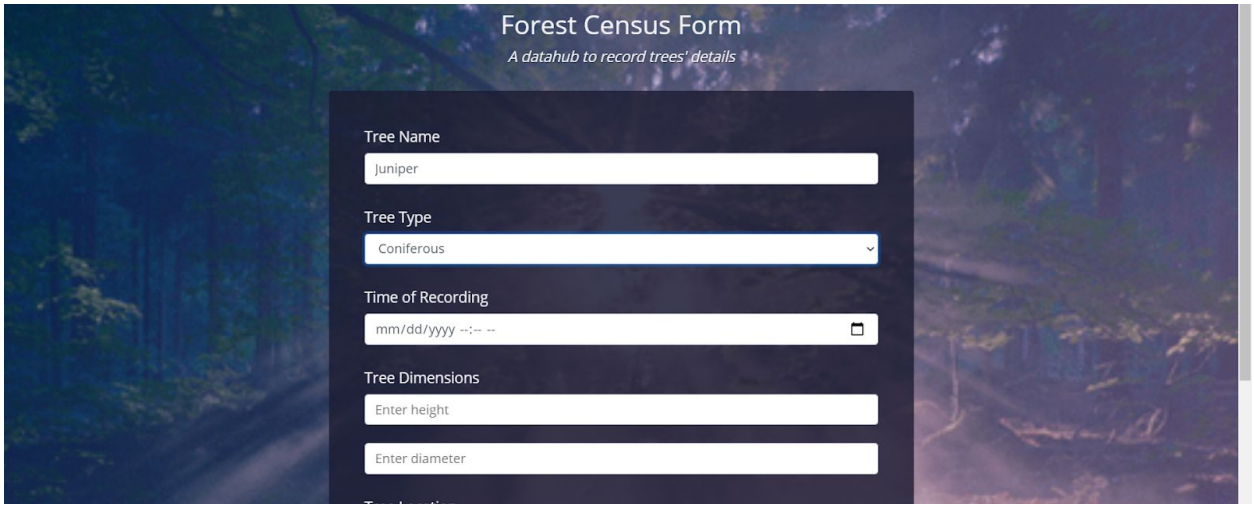
Shneiderman's eight golden rules principles adhered:

1. **Consistency**: Used consistent font style and size, and same button styles.
2. **Universal Usability**: GPS locations, date/time can be manually types or chosen through a picker. Maintained uniform theme.
3. **Informative feedback**: Gives alerts when a required field is not entered or incorrect value found.
4. **Design dialogs**: The user feels he/she is in control of the application.
5. **Prevent errors**: If a mandatory field is missed by mistake, then after submit is clicked the program doesn't hang without erroring. Points the error to users.
6. **Permit easy reversal of actions**: In case user wants to traceback, refresh option given to clear all fields.
7. **Support internal locus of control**: Good navigability within the app
8. **Reduce short term memory load**: Dropdown to select the type of tree. Hints given to the user to know what to enter.

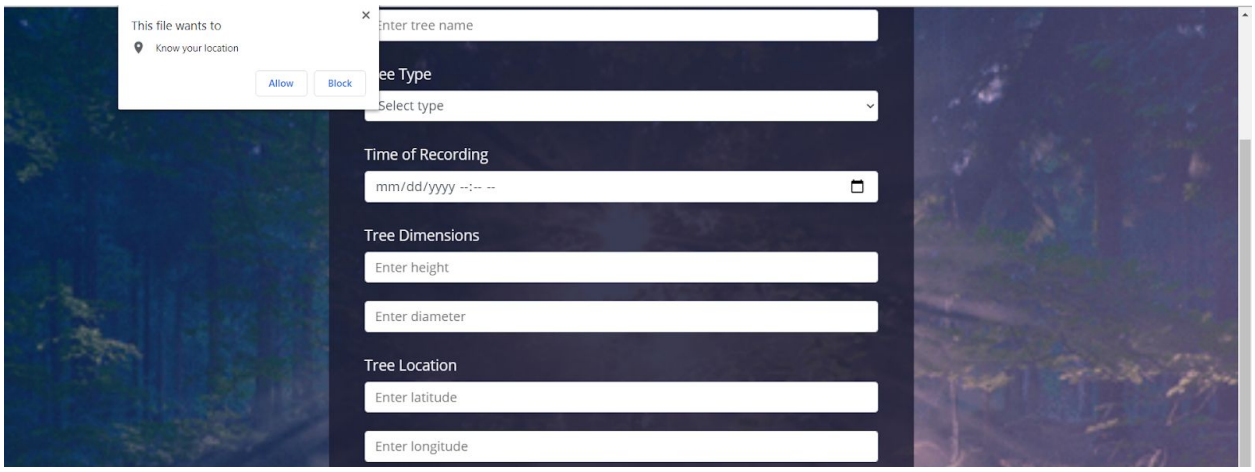
Mobile App:

1. Used different input fields for numeric and string inputs.
2. Arranged fields such that they can be differentiated from each other.
3. In the case of Data Entry, we must not use multiple screens. Navigation is not optimal
4. as if we have to update any field there will be an extra tap to go to the particular page.
5. Therefore it permits easy reversal of errors
6. The data can be entered in a single screen and it is scrollable in case of small screens.
7. Input specific keyboard to enter data, to avoid navigation to different keyboard menu.

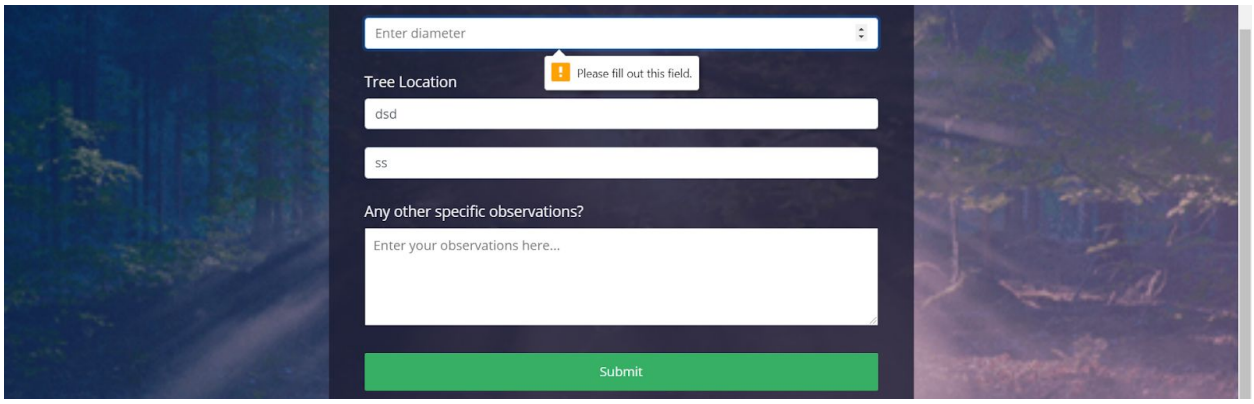
Screenshots of Web UI



Responsive web UI, to cater to various screen sizes



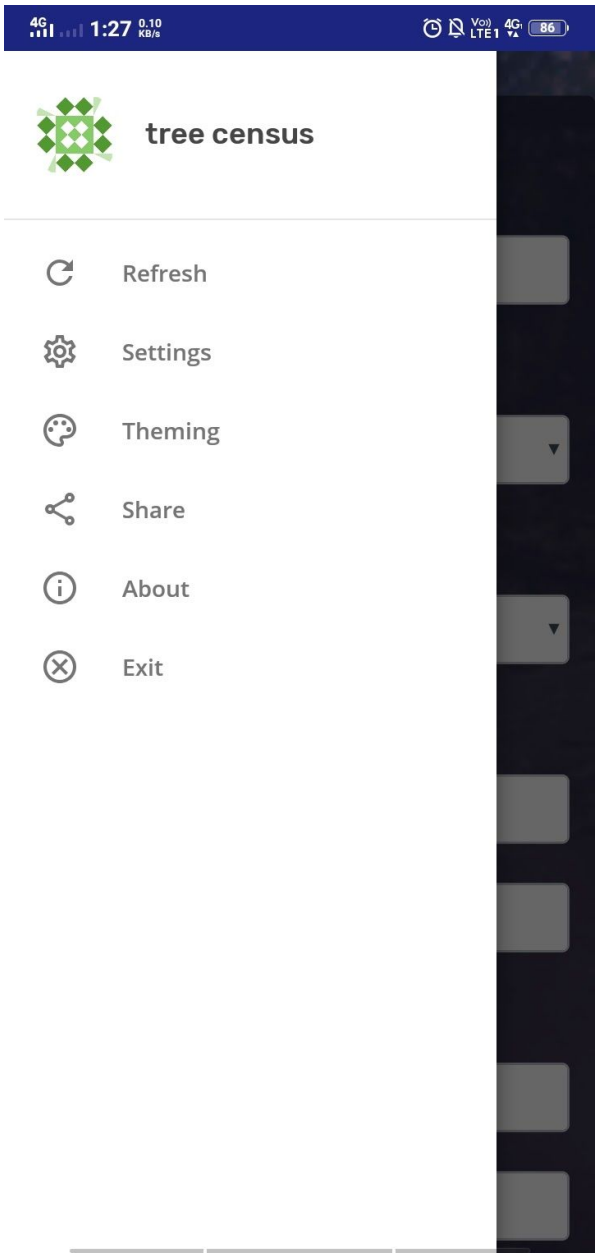
Automatic location filling based on current location, prevents manual entry

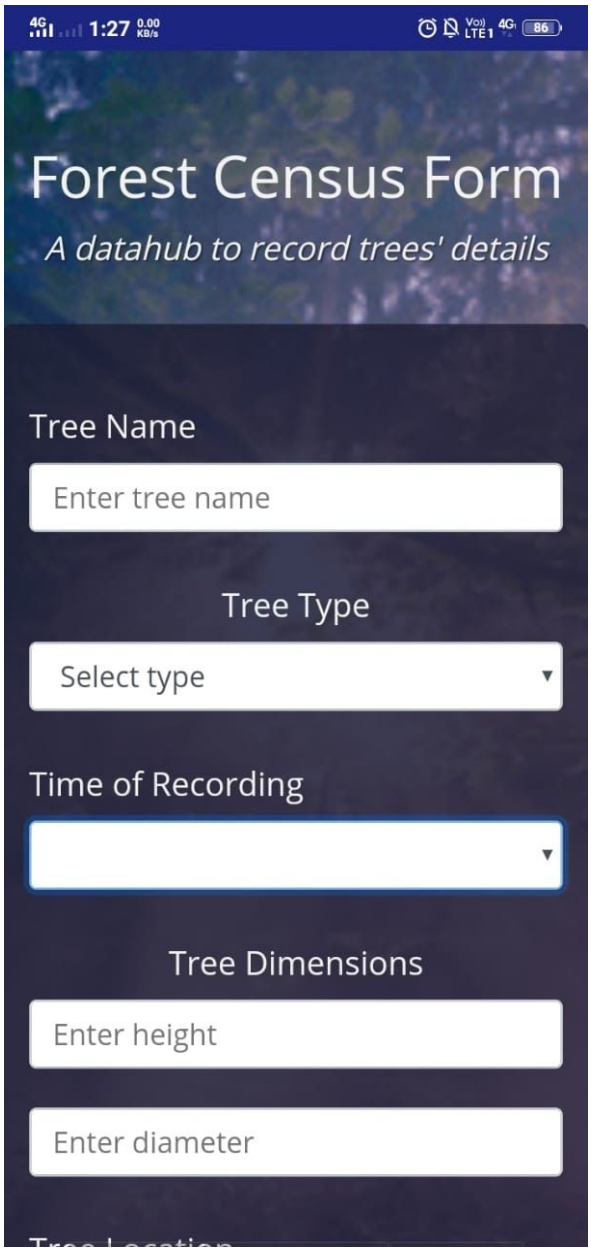


Form validated on Submit to give users another chance

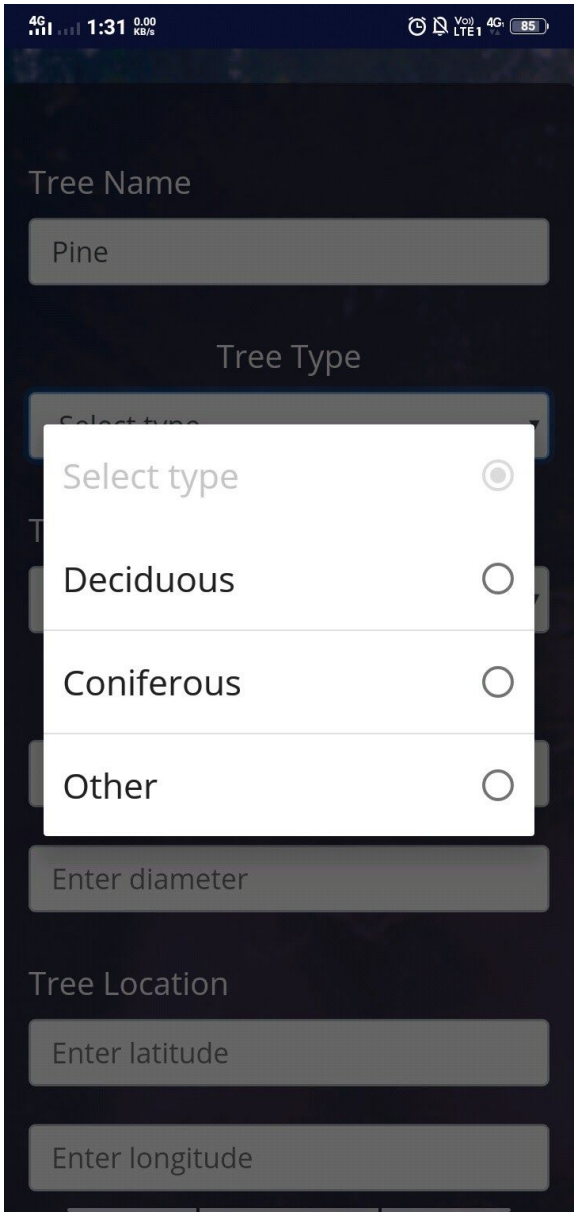
Screenshots of Mobile app

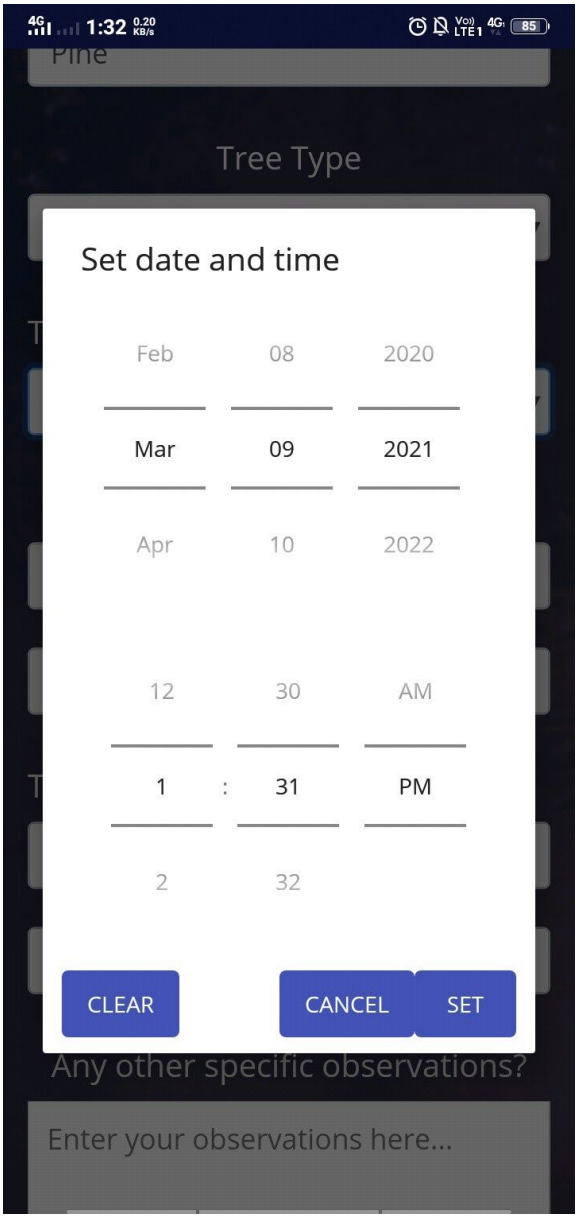
- **Side bar to refresh data, view details of app and change theme color.**
- **All fields have prompts given, to give users clarity**



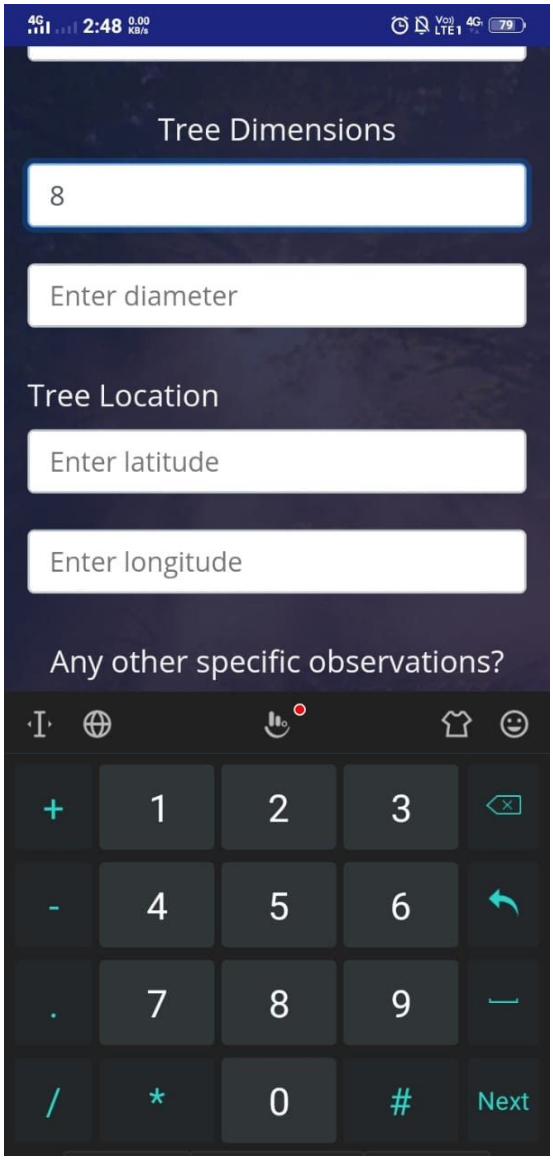


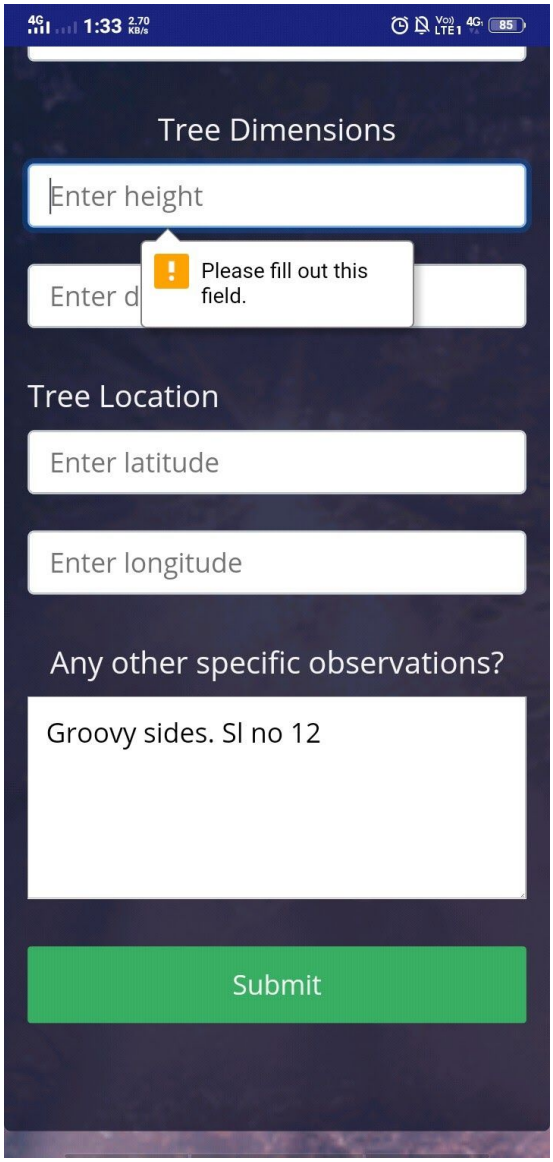
- **Different types given in drop down format to promote recognition over recall**
- **Easy way of selecting time and data. Option to key in manually too.**





- **Input specific keyboard provided to ease user experience**
- **Provision to note any additional details if releavnt and needed.**
- **Incorrectly filled entries/missed ones are highlighted to the user**





Observations & Analysis

Time taken by users is quite similar in both web and mobile UIs. However marginal lesser time is observed in case of web UI because expert users were surveyed whose typing speed is quite good, while in mobile UI some time is spent in moving from type mode to scroll mode, pick mode etc. The use of a virtual keyboard causes a little delay.

General comparison rating (1-10 scale with 10 being highest)

Criterion	**Web UI**	**Mobile UI**
Design & Look	10	10
Error tolerance	**9**	7
Ease & Functionalities	**10**	9
Navigability	9	9

Time comparison

Sl. No.	**Time in Web UI (s)**	**Time in Mobile UI (s)**
1	**12.5**	13.5
2	11	**10.5**
3	**12.4**	12.8
4	**13.2**	14
5	**12.6**	13.7

Hence, for this purpose of census form entry where more typing is required, a web UI is preferred.