HMSD Course Project

TEAM 1

Project Description:

Introduction

We are proposing to design a User friendly Software that works on specific Hydrological models and has varied functionalities. The components of the project are standalone so they can be integrated after completing one phase of the project. The GUI will ask for basic info like river basin to be chosen, duration to be considered for modelling and which functionality you want for output.

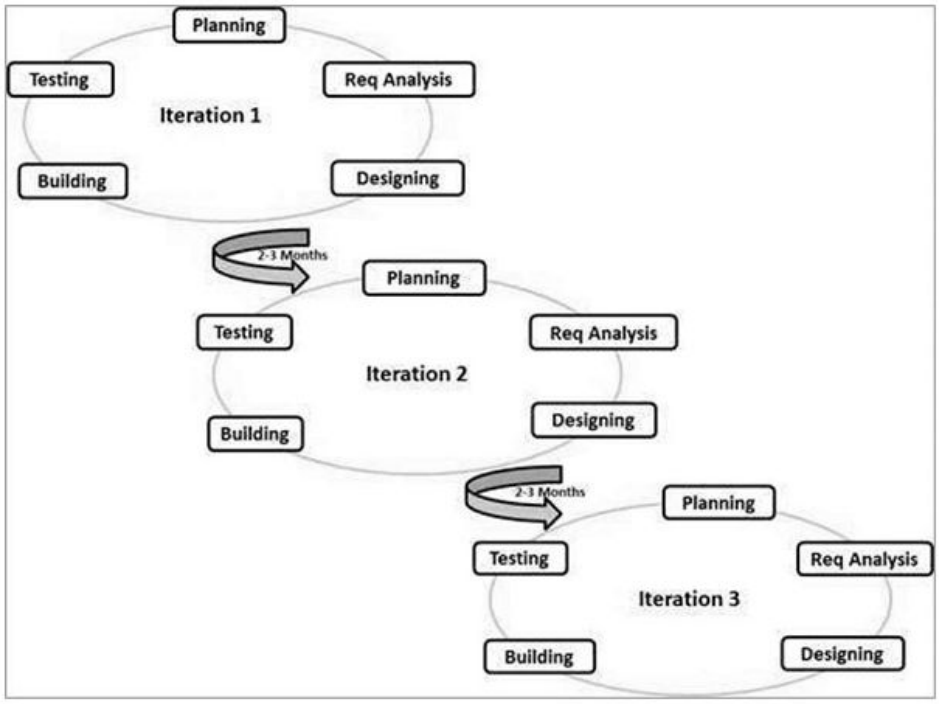
Application

For Example - User can select Krishna River Basin from the drop down menu. We can select rainfall runoff model as the functionality and duration as 10 years than we can get an analysis for the basin which is needed and which can we used for government processes and various purposes and planning.

Software Development Life Cycle Model

As the components of the project are standalone so they can be integrated after completing one phase of the project. So we will be using the **Agile model in our SDLC.** Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Every iteration involves cross functional teams working simultaneously on various areas like −

- Planning
- Requirements Analysis
- Design
- Coding
- Unit Testing and
- Acceptance Testing.
- At the end of the iteration, a working product is displayed to the customer and important stakeholders.

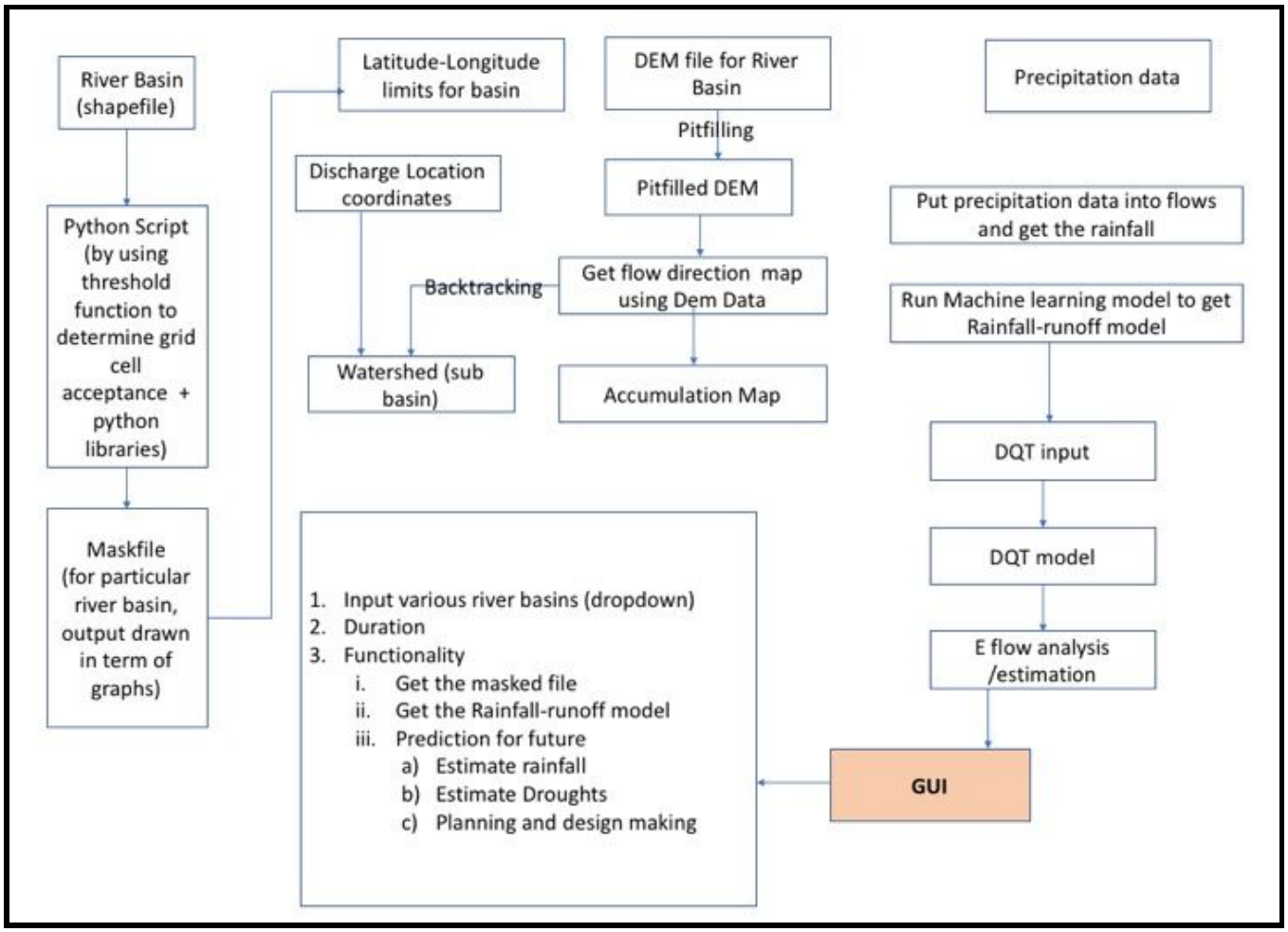


Procedure

- Developing the backend required for the project.
    - Getting the mask file from shape file
    - Using the DEM data, we get the watershed delineation and the flow directions.
    - Using the required inputs getting rainfall model
        - Pit filling
        - Get flow directions
        - Use ML models to get Rainfall-Runoff Model.
        - We get 2D grid with each cell specifying the respective discharge locations.
- Using the precipitation at discharge locations, we get TQ10 values corresponding to each discharge location.

- Finally, we have a draught classifier with the input of Location, Duration and RunOff data, get SPI, SRI.
- Linking all the outputs from the various levels and making it a final component for GUI.
- Using Tkinter (python based) for developing the GUI for the project.

Flowchart



Tentative Project Timeline

Date(should be finished by)	Task being done
12/11/2019	Project flowchart and pr
14/11/2019	Code Phase 1 (Developing the backend model) part 1 **Getting the masked file**
15/11/2019	Testing code phase 1 &
19/11/2019	Code Phase 2 (Developing the backend model) part 2 **Getting the Rainfall Runoff Model**
20/11/2019	Testing code phase 2
24/11/2019	Integrating all the above outputs
25/11/2019	Testing above integrated models
27/11/2019	Report and Slides
28/11/2019	Presentation

Responsibilities:

Rachit, Pratik, Avantika, Pawan, Priyanka
- Designing flowchart and planning the project, documentation

Devansh, Pawan, Prathyakshun, Rachit
- Designing GUI, GUI-Testing, Integration, Documentation

Prathyakshun, Rachit,Pratik,Aniket, Devansh
- Integrating the outputs and Testing

Siddhant, Priyanka, Aniket, Pratik
- GUI-Testing, Backend UnitTesting, Documentation,