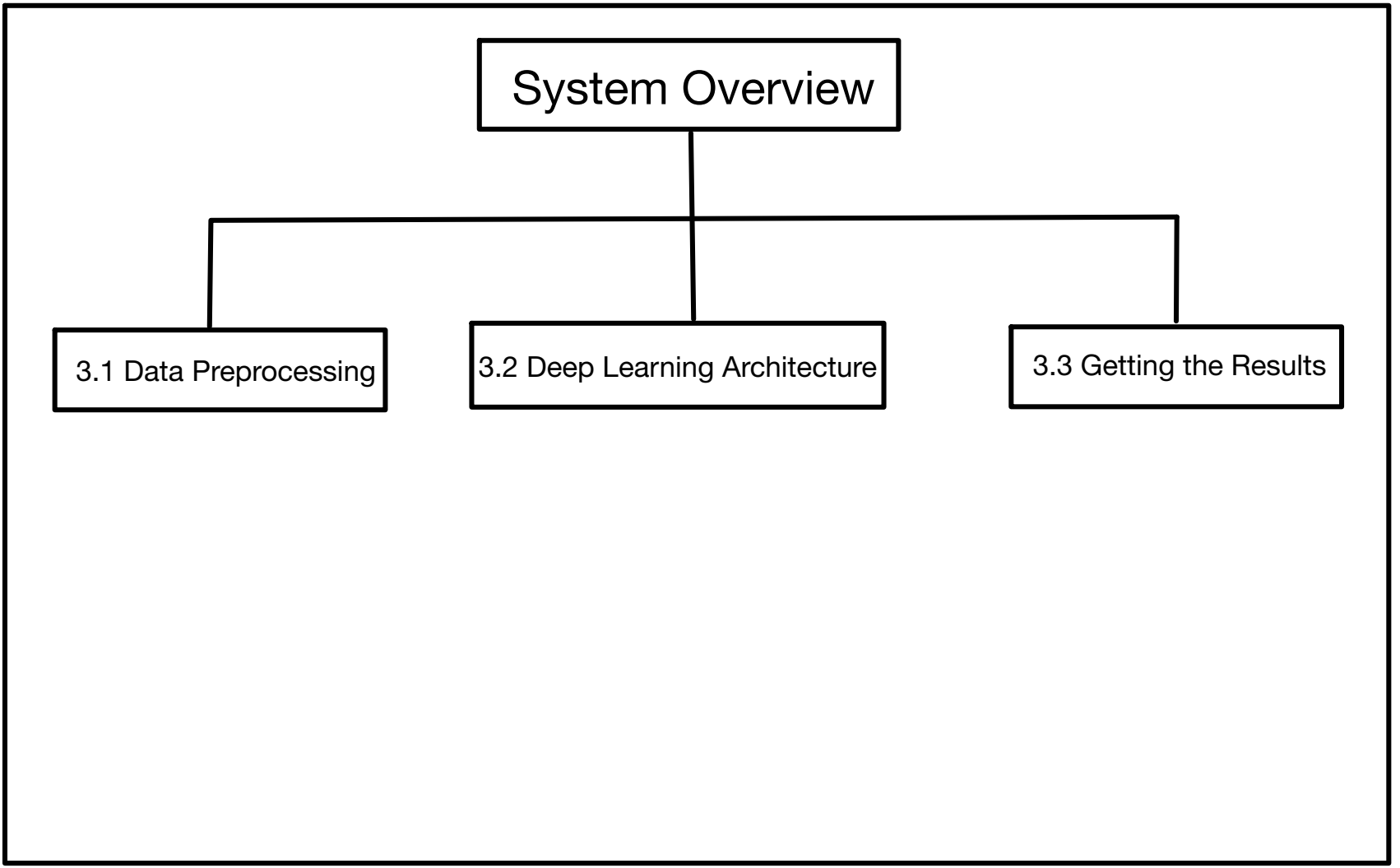
Diagram of

Google REU Project


System Overview
3.1 Data Preprocessing
3.2 Deep Learning Architecture
3.3 Getting the Results

3.1 Data Preprocessing

Input Data:

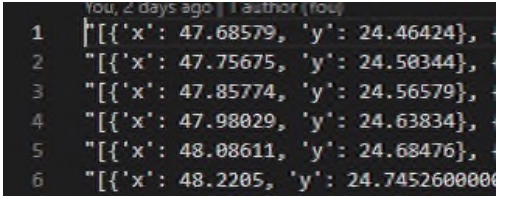
NBA SportVU 2015-16 Player Trajectory JSON Data

FOR EACH GAME

extract 25D moment data

and put into CSV

moments.csv



create list of **Possession** from moments.csv

```
class Possession:

    def __init__(self):

        self.moments : List[Moment] = []

        self.temporalWindows = []


        self.terminalActionIndex = -1
```

add Temporal Windows

to each Possession

```
T = 128 # 128 moments in a Temporal Window

You, 2 days ago | 1 author (You)
class TemporalWindow:

    def __init__(self) -> None:

        self.moments : List[Moment] = []
        self.label : int
```

convert Temporal Windows to an input matrix and output vector

Input Matrix : [[128 moments], [128 moments],]

Output Vector : [label1, label2]

input for the Deep Learning Architecture

NBA SportsVU JSON Data

```
{ "gameid" : "2101",
  "gamedate" : "2016-01-05",
  "events : [
    {
      "eventId" : "1" ,
      "visitor" : {
         "name" : "teamName",
         "teamid" : "id",
         "abbreviation" : "teamABBRV",
         "players" : [
            array of player maps where each player has a
            {"lastname" , "firstname" , "playerid" , "jersey" , "position"},
         ]
      },

      "home" : (has the same format as visitor,

      "moments" : [[quarterNum,msSinceJan11970, timeLeftInCurrentQuarter, shotClockTime,
null, [[-1,-1,ballX,ballY,ballZ], [teamiD,playeriD,x,y,z ]] ] , [another moment same format]]

    },

    {
      another event same format
    }



  ]
 } -
```