**Chatbot design document**

Class divisions/reasons (in no particular order… can also define specific functions):

1. Historical matrix
   1. Open/close
      1. Save to external file
      2. Read into active memory and write (if changed) at end
      3. Allows for expansion of matrix without hard coding initialization
   2. Define dimensions and other characteristics associated with your matrix
      1. Talked about correlation values between words for several “dimensions”
         1. Dimensions: noun, verb, adjective, adverb
         2. One thought is to save this like an image (or similar), since images frequently save with RGB values for each area. Note that viewing it in this sense also means that one approach for selecting responses will be similar to picking the “color”.
   3. All other actions that will directly depend on how this matrix is accessed, saved, laid out, etc.
2. Interaction
   1. Taking the input in from the user
      1. Make sure all text is in a known format (e.g., convert all to lowercase, correct spelling, etc.)
      2. Identify if user response indicates previous response was acceptable or wrong
      3. Take input and remove extraneous parts, identify nouns, verbs, etc.
         1. identify key words
         2. identify contextual keys
   2. Print output
      1. Generate sentence structure
3. Matrix operations/manipulations
   1. Based on the keywords/contextual keys find optimal words
   2. Update temporary matrix to reflect if responses were good or bad
      1. Top right of matrix updated for current conversation so that the correlations more accurately reflect how the current conversation is interlinked
      2. Update the bottom left (initial/saved part of the matrix) using some weighting method. A simple implementation would be to be a small linear change (vs top right matrix) scaled by the total number of words you have.