During this week, I, along with my team members implemented a small prototype on using fuzzy logic with user modelling, based on the paper on Evaluating the integration of fuzzy logic into the student model of a web-based learning environment. The paper advocates the integration of fuzzy logic to the user modelling for a much better interpretation and representation that is more close to human.

The paper defines the following rules as member functions to categorise the user in four fuzzy sets: Unknown(Un), Unsatisfactorily Known(UK), Known(K) and Learned(L).

\[
\mu_{Un} = \begin{cases} 
1 & x \leq 55 \\
1 - (x-55)/5 & 55 < x < 60 \\
0 & x \geq 60 
\end{cases}
\]

\[
\mu_{UK} = \begin{cases} 
0 & x \leq 55 \text{ or } x \geq 75 \\
(x-55)/5 & 55 < x < 60 \\
1 & 60 \leq x \leq 70 \\
1 - (x - 70)/5 & 70 < x < 75 
\end{cases}
\]

\[
\mu_{K} = \begin{cases} 
0 & x \leq 70 \text{ or } x \geq 90 \\
(x-70)/5 & 70 < x < 75 \\
1 & 75 \leq x \leq 85 \\
1 - (x - 85)/5 & 85 < x < 90 
\end{cases}
\]

\[
\mu_{L} = \begin{cases} 
0 & x \leq 85 \\
(x-85)/5 & 85 < x < 90 \\
1 & 90 \leq x \leq 100 
\end{cases}
\]

Here, $x$ is the degree of success (the knowledge level) the student holds in the concept, and $\mu$, represents the degree to which the student has a membership of that particular concept.

Based on this membership functions, we can evaluate the knowledge level of the student. I, along with my other group members made a small prototype of this system in JAVA, where, each time the student gives the quiz, his knowledge level of that concept as well as other related concepts is changed and based on that, his membership to a fuzzy set changes.
References