## **CHAPTER 3**

## LITERATURE STUDY

Research on animatronic is still less in Indonesia. There are just few project which offering advanced animatronic. One of the projects is "ROBOT EKSPRESI UCAPAN DAN MIMIK WAJAH MANUSIA" written by Steven Kimsha. The project offers several features including eye and eyebrows. Eyebrow movements that can be produced are angry, sad, normal, confused, and surprised. Eye movements that can be produced are to look up, look down, left, right, and straight ahead. One of the most advanced features is the mouth can speak alphabet a – z. The project uses 3 databases, eyebrows movement database, eye movement database, and mouth movement database. The program process external data txt file used as a key to drive the motor servo

Unlike the previous project, this project added a gesture sensor which is made by several ultrasonic sensor that will be used as a key for moving the head and focusing only on the eyebrows to give an expression. Ultrasonic will detect and move to the direction of the hand. This project uses seven sensor ultrasonic and three motor servo as neck mover, left eyebrows mover, and right eyebrows mover. Each ultrasonic sensor affect the rotation of the hand to any angle. With seven ultrasonic sensor it will produce a much more specific head rotation to every degrees rather than those using only a few ultrasonic sensor. For movement on the eyebrows, the eyebrows only move when there is a light shining on the face of the robot. For the expression this eyebrows only produce a wrinkle expression. As we can see the different betweenn this project and the previous project is this project added an ability to the robot to move 180 degrees to left and right. The previous project is very perfect and very focused on the details of the expressions. But in this project is reduction of some expression on the face which it can just produced wrinkle expression.