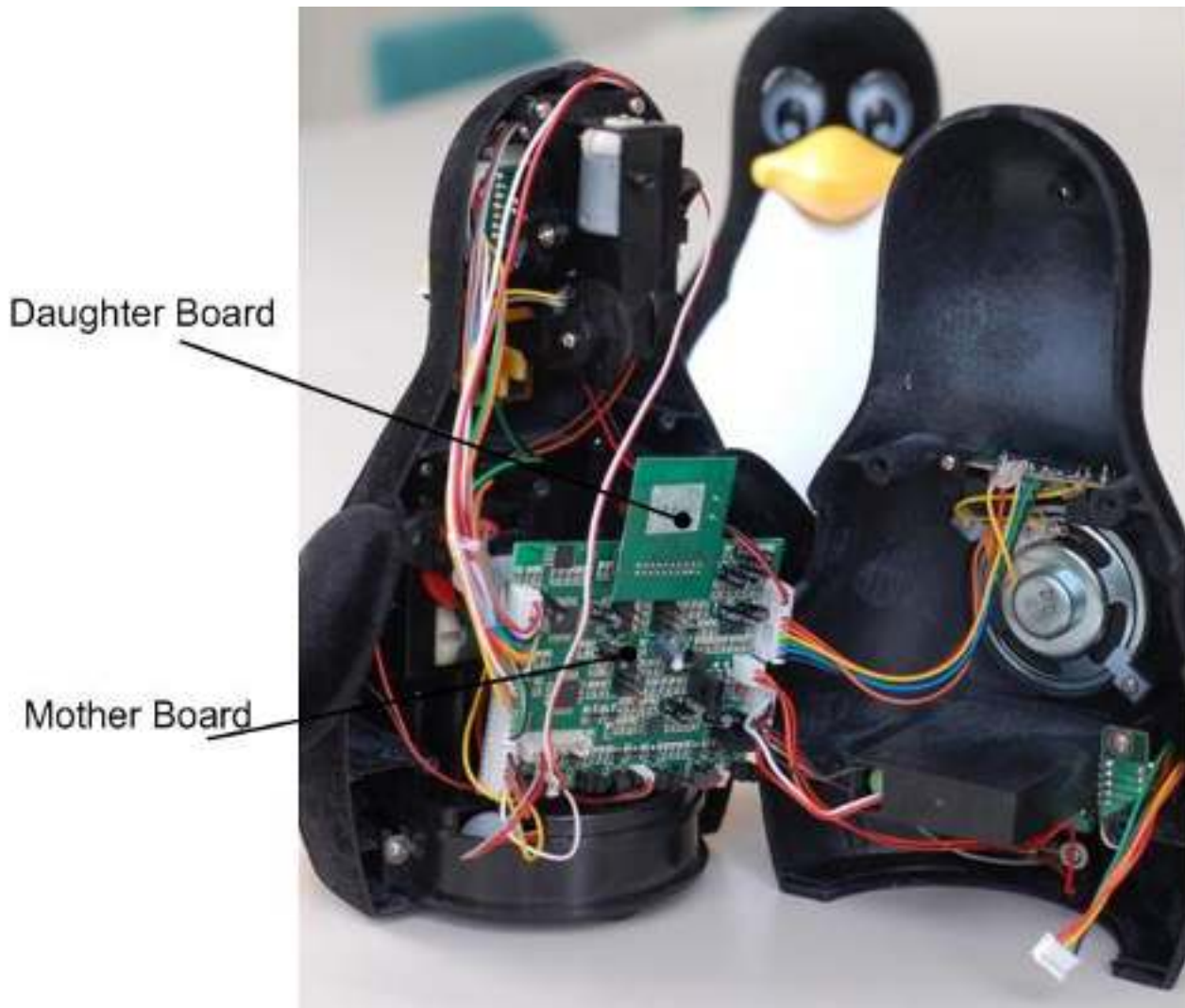


Inside Tux Droid you may find a mother board and a daughter board plugged on it as you could see in the photo.



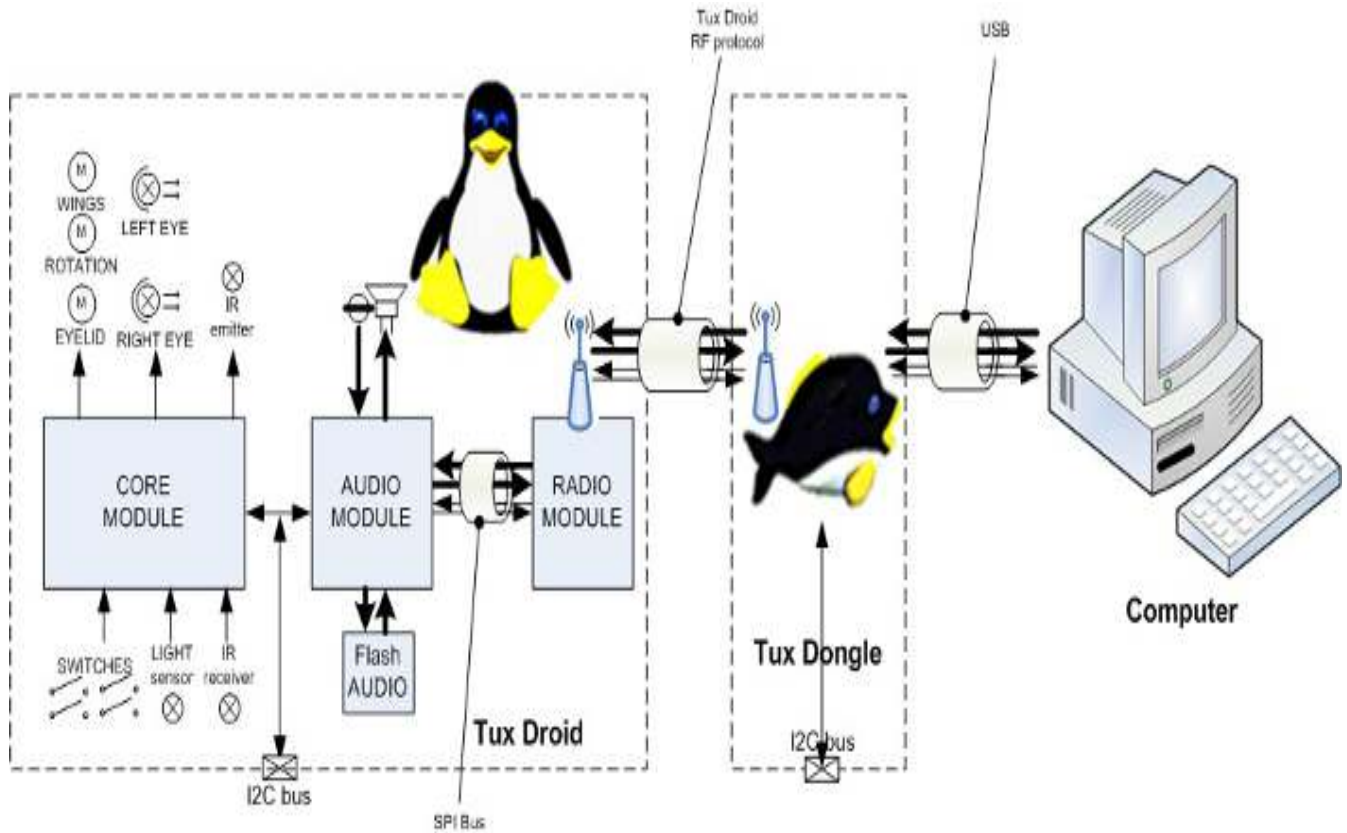
The daughter board is the radio part of Tux linking it to the dongle. The mother board is in charge of audio functionalities, sensors and actuators control plus battery charging.

Modules of Tux Droid Hardware

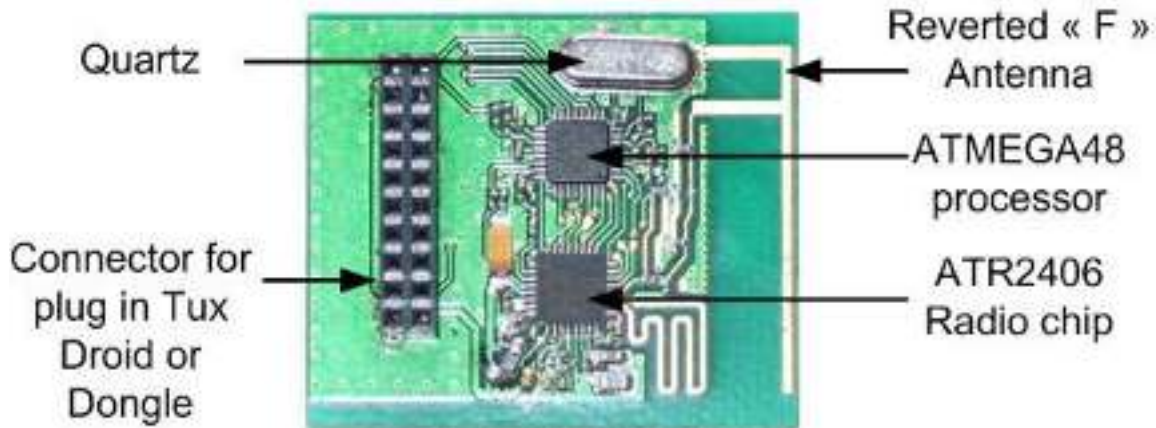
A module is a combination of one processor, firmware running on the processor and discrete hardware components. Tux Droid hardware is built around three modules

- the Radio module (on the daughter board)
- the Audio module (on the mother board)
- the Core module (on the mother board)

These modules are chained thanks to two bidirectional buses: an SPI bus between the radio and audio modules; an I2C bus between the audio and the core modules.



- The radio module includes an RF chip (ATR2406) and a processor (ATMEGA48). The RF chip is in charge of the physical layer. The radio processor manages the transport layer for streaming and control data. In order to provide full duplex audio with limited buffer sizes, the radio link is switching every 1 millisecond between emitting and receiving. The processor is also in charge of encapsulating / extracting the audio stream and controlling data in / from the RF frames.



- The audio module manages the sound aspects of Tux Droid.
 - in the downward way, it plays the audio stream coming from the RF module.
 - in the upward way, the audio module samples audio and sends the stream to the RF module.
 - it is also able to play sounds stored in the internal flash memory chip and manages the

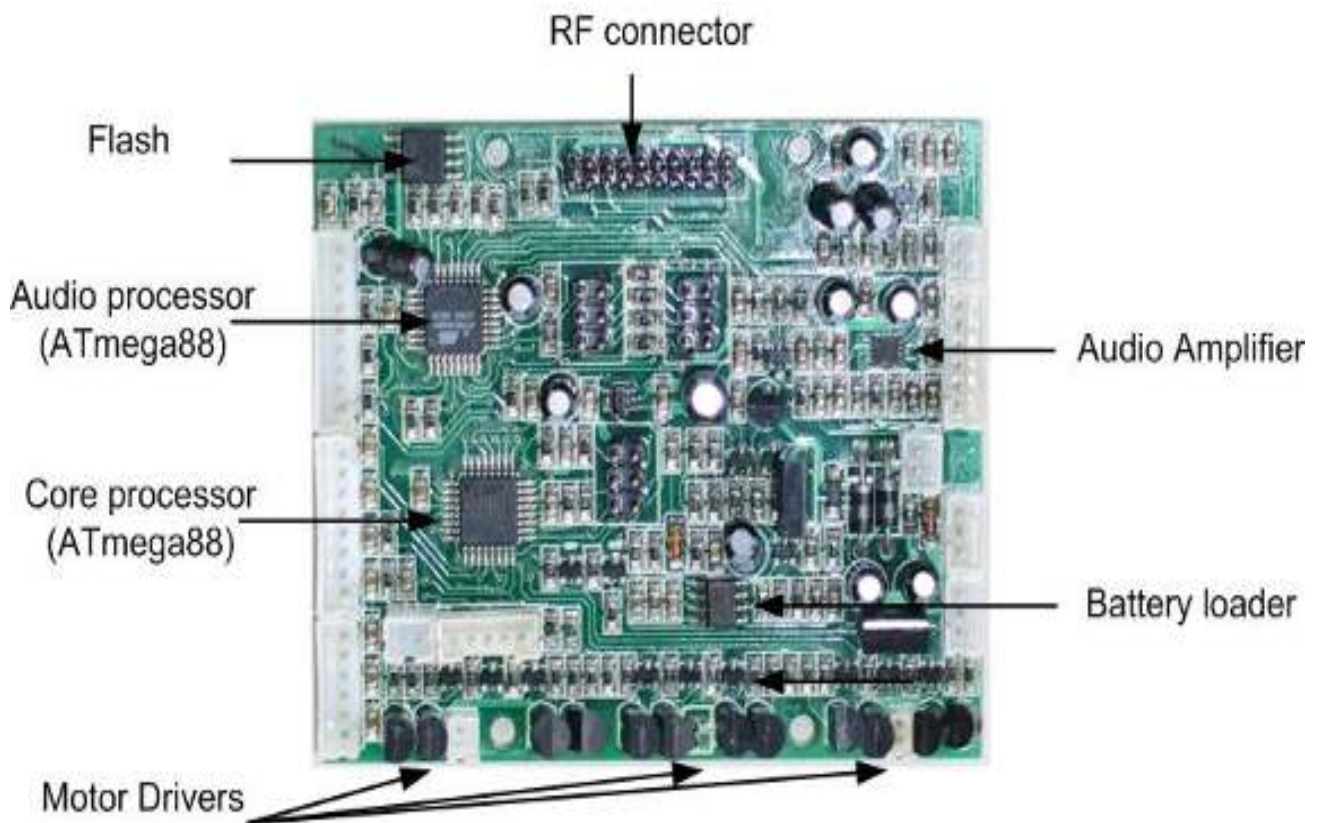
recording of new sounds in the flash memory.

The sound module also acts as a router forwarding back and forth control data through the I2C bus to the "behavior module"

- The core module is in charge of firing actuation commands received on its I2C bus. It also collects sensors status and send them to the audio module for transmission. The core processor can be programmed through the I2C link to exhibit new stand alone behavior.

Tux Droid Mother Board

The mother board is composed of the "core" and "audio" modules. The reader may identify the main components on the layout photo.



The link [Mother Board Topology](#) will provide you the detailed schematic of the main board.