Abstract
Animal-like robots, such as cheetah robot, require agile movements including running and jumping. Even though many animal-like robots have been developed, most of them have stiff bodies. Stiff body structure limits a robot’s balance and agile movements. However, actual cheetah has a flexible spine structure, which allows it to run very fast. We propose a distributed and scalable electromechanical actuation for agile systems to overcome the limitations of the current robots’ dynamic movements. This system consists of the stacks of E-shaped core with two coils. Conventional robotic actuators (DC motors) are individually operated, however, the proposed system shares flux path through the whole system, so the system becomes more efficient. The system is also able to detect the position of each spine structure. The proposed electromechanical actuation design can allow animal-like robots to have faster and flexible movements and better balancing.