# EnerCage: A Scalable Array of Wireless Sensor Modules (#4367)

*EnerCage: intelligent wireless sensor modules to energize, track, and interrogate implantable microelectronic devices in small freely moving animals*

Georgia Tech inventors have created EnerCage: a scalable array of intelligent wireless sensor modules to energize, track, and interrogate implantable microelectronic devices in small freely moving animals. The system includes a wireless charging system for inductively charging or powering a device, a stationary base system, and a moving subject. The stationary base system includes an array of primary coils that are adapted to generate a magnetic field and a sensor system. The moving subject carries a device that includes a secondary coil that can be inductively charged and powered by the magnetic field emitted from the primary coil and a magnet to be tracked by the sensor system. The moving subject can move in proximity to a surface of the stationary base system. The sensor system is adapted to communicate the location of the moving subject along the surface, wherein those coils closest to the moving subject are activated.

## Benefits/Advantages

- Wireless
- Functional with small animals
- Scalable

## Potential Commercial Applications

- Research with small animals
- Insight into medical device development

## Background/Context for This Invention

Most wireless data acquisition solutions use batteries to power the electronics carried by the animal, which necessitates a compromise between the duration of the experiments and the weight that the animal can carry. As a result, most researchers forgo the numerous benefits of wireless data acquisition systems and use systems that tether behaving animals to electrophysiology instrumentation through cables. The use of these cables results in substantial limitations on weight, the range over which an animal can traverse, susceptibility to noise, motion artifacts, and the need for expensive commutators to eliminate tangling and twisting.

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**For more information about this technology, please visit:**
https://licensing.research.gatech.edu/technology/enercage-scalable-array-wireless-sensor-modules