Talk Title

The Evolution of our Microrobot Magnetic Manipulation Systems

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Abstract

Since our group began working on magnetically manipulating unthethered magnetic microstructures a decade ago, we have developed a wide range of systems for generating magnetic fields and field gradients. The scale of the systems varies from small ones suitable for microscopy applications to large systems capable of manipulating structures within a human body. In this talk I will present an overview of our approach and lessons learned along the way. I will also discuss the various schemes we have developed for propelling devices using magnetic fields that vary spatially and temporally. Along the way I will present applications we are pursuing and where the technology may be heading.

References


Figure 9: Nelson et al.: (a) The OctoMag electromagnetic control system is capable of 5DOF manipulation of magnetic micro devices, and (b) a magnetic microrobot docked in a chorioallantoic membrane vein of a chicken embryo.