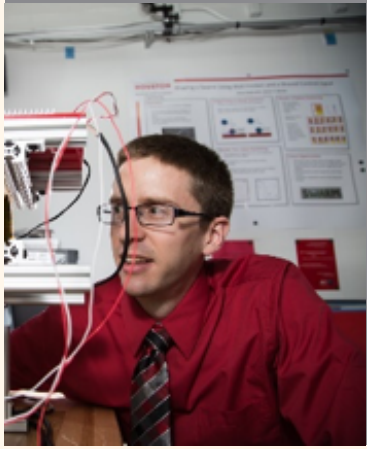# Oct 25, 2018

An Inside Job: using tiny robot swarms to heal the body

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ABSTRACT:

In the Disney Movie Big Hero 6, the protagonist Hiro offers a profound view into the future by manufacturing a swarm of 100,000 microbots. Hiro controls them to self-assemble, to build structures, and to transport goods and materials. While the "microrobots" of the film are fantasy, the ideas are rooted in reality. Today, microrobots can be produced in extremely large quantities, but due to their tiny size they have limited autonomy. Instead, today's microbots are usually simple particles that are steered from the outside, often using magnetic fields. In my talk, I'll offer insight on how our techniques will enable physicians to steer large numbers of simple robots from the outside, and share how we are using MRI scanners to steer particles for targeted therapy, medical interventions, and drug delivery in regions inaccessible by large robots.

BIOGRAPHY:

Aaron T. Becker received a Ph.D. degree in electrical and computer engineering from University of Illinois at Urbana Champaign, IL, USA, in 2012. He was a Postdoctoral Scholar with the Multi-Robot Systems Laboratory, Rice University, and a Postdoctoral Fellow with Boston Children's Hospital and Harvard Medical School, Boston, MA, USA, before joining the Electrical and Computer Engineering Department, University of Houston, TX, USA, as an Assistant Professor in 2014. He received the Best Paper Award at IROS 2013 and the NSF CAREER Award in 2016. His channel www.youtube.com/aabecker5 highlights control laws and algorithms for robot swarms. Aaron's wife Laney and four young boys have called the University of Houston home since 2017 as part of the Faculty-In-Residence program.