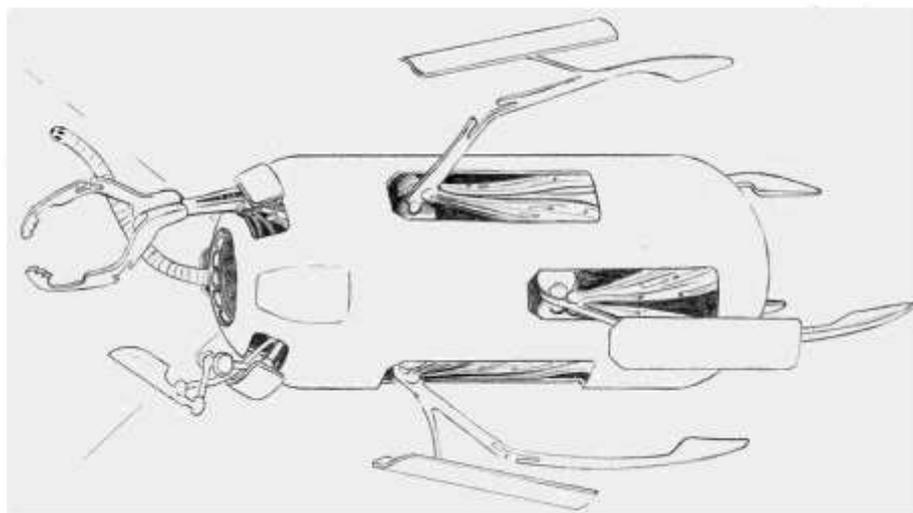


# Café Scientifique Headingley

**Monday 14 March 2022**  
**Medical Capsule Robots: A Fantastic Voyage**

**By Pietro Valdastri**



**Outline:** At the beginning of the new millennium, wireless capsule endoscopy was introduced as a minimally invasive method of inspecting the digestive tract. The possibility of collecting images deep inside the human body just by swallowing a “pill” revolutionized the field of gastrointestinal endoscopy and sparked a brand-new field of research in robotics: *medical capsule robots*. These are self-contained robots that leverage extreme miniaturization to access and operate in environments that are out of reach for larger devices. In medicine, capsule robots can enter the human body through natural orifices or small incisions, and detect and cure life-threatening diseases in a non-invasive manner. This talk will provide a perspective on how this field has evolved in the last ten year. We will explore what was accomplished, what has failed, and what were the lessons learned. We will also discuss enabling technologies, intelligent control, possible levels of computer assistance, and highlight future challenges in this ongoing *Fantastic Voyage*.

**Prof. Valdastri** was awarded a degree in Electronic Engineering from the University of Pisa in 2001 and a PhD degree cum Laude in Biomedical Engineering from Scuola Superiore Sant’Anna in 2006. He then served as Assistant Professor of Biomedical Engineering at the BioRobotics Institute of Scuola Superiore Sant’Anna for three years, focusing on implantable medical devices and surgical robotics. In 2011, he became Assistant Professor of Mechanical Engineering at Vanderbilt University and started the Science and Technologies Of Robotics in Medicine (STORM) Lab focusing on medical capsule robots for gastrointestinal endoscopy and abdominal surgery. In 2016, he moved to Leeds as Professor and Chair in Robotics and Autonomous Systems with a primary appointment in the School of Electronic and Electrical Engineering and a secondary appointment in the School of Mechanical Engineering. Currently, he is directing the STORM Lab, the Institute of Robotics, Autonomous System and Sensing (IRASS), the Robotics at Leeds network and is Deputy Director of the recently established Leeds Cancer Research Centre.

**Venue:** The New Headingley Club, 56 St Michael's Rd., Leeds LS6 3BG

**Time:** Room opens at 7:30; talk begins promptly at 7:45pm

**Entry:** Donation please for room hire and expenses: **£3 at the door**



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<http://cafesci.hdtleeds.org.uk/>