



David FOLIO

副教授（终身）

机器人、微/纳米机器人对于
生物医学和人类健康的应用。

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概要

David FOLIO 在 2007 年在机器人和控制领域获得博士学位。他工作在法国图卢兹大学的 LAAS 实验室（系统分析和体系结构实验室）的 RAP（机器人、行动和认知）小组，并以 Viviane Cadenat 博士为指导。从 2007 年到 2008 年，他加入了 Inria Rennes-Bretagne Atlantique 中心的 Lagadic 团队，担任博士后研究员。自 2008 年以来，他是 INSA CVL（法国国立应用科学院）的副教授，负责控制和电气科学。他的研究领域是在 PRISME 实验室的 IRAuS（图像，机器人、自动控制和信号）小组针对微/纳米机器人的建模，控制和导航，主要致力于人体健康和生物医学应用。自 2008 年以来，David FOLIO 发表了 43 种科学出版物，其中包括知名 ISI 期刊的 13 篇文章和 20 篇国际会议论文。

关键词：机器人导航控制；微/纳米机器人；磁性微型机器人；医疗机器人

当前的职位和责任

2008 年 9 月至今 副教授（终身制）

-----隶属于以下三个工作单位：法国国立应用科学院、法国奥尔良大学、PRISME 实验室。

-----工业风险控制（MRI），能源，风险和环境（ERE）以及工程科学和技术（STPI）部门的教学团队成员。

----- PRISME 实验室的图像、机器人、自动控制和信号（IRAuS）机器人研究小组的成员。

-----课题为磁性微米/纳米机器人的建模、控制和导航，主要致力于健康和生物医学应用。

自 2014 年起

-----负责工业风险控制（MRI）部门第 5 年（工程师学位）的核能选项。

自 2017 年起

-----当选为能源、风险和环境（ERE）部门理事会成员。

研究经验和教育

2007 年 10 月至 2008 年 8 月 博士后研究



-----Inria de Rennes Bretagne Atlantique, 雷恩, 法国

课题: 无人飞行器传感器融合, Francois CHAUMETTE 教授指导。

2004 年 2 月至 2007 年 7 月 博士学位 (机器人控制课题)

-----图卢兹大学, 法国图卢兹

课题: 基于多传感器的控制, 避免碰撞/遮挡和视觉特征估计, 由 Viviane CADENAT 指导。

2003 年至 2004 年 硕士学位

-----图卢兹大学, 法国图卢兹

研究方向: 智能系统

2002 年至 2003 年 学士学位

-----图卢兹大学, 法国图卢兹

研究方向: 系统信息

教授研究生课程

电气工程: 电气工程; 电子电路; 电力; 传感器 (从第一学期到第六学期)。

控制: 信号处理; 控制和观测设计。

机器人: 机器人和视觉

研究领域

微/纳米机器人的建模、控制和导航策略

-----磁性微/纳米机器人;

-----催化微/纳米机器人;

-----微操作;

机器人远程超声

专业活动

自 2015 年起担任国际小型机器人、操纵和自动化大会 (MARSS) 计划委员会成员。

自 2013 年起担任“国际先进机器人系统杂志”(IJARS) 编委会成员。

自 2005 年以来, IEEE 会员 (SM'05, AM'08, M'12)。

担任以下定期审稿人:

-----IEEE 机器人学报 Transactions on Robotics (TRO);

-----IEEE 生物医学工程学报 Transactions on Biomedical Engineering (TBME);

-----IEEE / ASME 机电一体化学报 Transactions on Mechatronics (TMECH);

-----IEEE 自动化科学与工程学报 Transactions on Automation Science and Engineering (TASE);

-----国际先进机器人系统杂志 (IJARS);

-----IEEE 机器人与自动化国际会议 (ICRA);

-----IEEE / RSJ 智能机器人和系统国际会议 (IROS);

-----IEEE / RAS&EMBS 生物医学机器人和生物机电一体化国际会议 (BioRob);

国际会议分会场主席

-----IEEE / RSJ 智能机器人和系统国际会议 (IROS'12);

奖项: 杰出研究奖 (PEDR 2014-2018)



参考附录

学术期刊

- [1] Sarkis, B., Folio, D. and Antoine Ferreira. Catalytic Tubular Microjet Navigating in Confined Microfluidic Channels: Modeling and Optimization. *IEEE/ASME Journal of Microelectromechanical Systems*, 99(9):pp. 1–11, 2018. doi>10.1109/JMEMS.2018.2803803
- [2] Folio, D. and Ferreira, A. (2017). 2D robust magnetic resonance navigation of a ferromagnetic microrobot using pareto optimality. *IEEE Transactions on Robotics*, 33(3): 583-593.
- [3] Jang, B., Wang, W., Wiget, S., Petruska, A., Chen, X., Hu, C., Hong, A., Folio, D., Ferreira, A., Pané, S., and Nelson, B. (2016). Catalytic locomotion of core-shell nanowire motors. *ACS Nano*, doi>10(11):9983–9991.
- [4] Mellal, L., Folio, D., Belharet, K., and Ferreira, A. (2016b). Modeling of optimal targeted therapies using drug-loaded magnetic nanoparticles for the liver cancer. *IEEE Transactions on Nano-Bioscience*, 15(3):265–274.
- [5] Folio, D., Dahmen, C., Ferreira, A., and Fatikow, S. (2016). Mri-based dynamic tracking of an untethered ferromagnetic microcapsule navigating in liquid. *International Journal of Optomechatronics*, 10(2):73–96.
- [6] Mellal, L., Belharet, K., Folio, D., and Ferreira, A. (2015a). Optimal structure of particles-based superparamagnetic microrobots: application to mri guided targeted drug therapy. *Journal of Nanoparticle Research*, 17(2):1–14.
- [7] Amari, N., Folio, D., and Ferreira, A. (2014). Motion of a micro/nanomanipulator using a laser beam tracking system. *International Journal of Optomechatronics*, 8(1):30–46.
- [8] Krupa, A., Folio, D., Novales, C., Vieyres, P., and Li, T. (2014). Robotized tele-echography: an assisting visibility tool to support expert diagnostic. *IEEE Systems Journal*, 99:1–10.
- [9] Belharet, K., Folio, D., and Ferreira, A. (2013). Simulation and planning of a magnetically actuated microrobot navigating in arteries. *IEEE Transactions on Biomedical Engineering*, 60(4):994–1001. doi>10.1109/TBME.2012.2236092
- [10] Cadenat, V., Folio, D., and Durand, A. (2012). A comparison of two sequencing techniques to perform a vision-based navigation task in a cluttered environment. *Advanced Robotics*, 26(5-6):487–514. doi>10.1163/156855311X617470
- [11] Kim, J., Ladjal, H., Folio, D., Ferreira, A., and Kim, J. (2012). Evaluation of telerobotic shared control strategy for efficient single-cell manipulation. *IEEE Transactions on Automation Science and Engineering*, 9(2):402–406. doi>10.1109/TASE.2011.2174357
- [12] Belharet, K., Folio, D., and Ferreira, A. (2011). Three-dimensional controlled motion of a micro-robot using magnetic gradients. *Advanced Robotics*, 25(8):1069–1083. doi>10.1163/016918611X568657
- [13] Belharet, K., Folio, D., and Ferreira, A. (2010). MRI-based microrobotic system for the propulsion and navigation of ferromagnetic microcapsules. *Minimally Invasive Therapy & Allied Technologies*, 19(3):157–169. doi>10.3109/13645706.2010.481402

出版书物

- [14] Amari, N., Folio, D., and Ferreira, A. (2016). *Encyclopedia of Nanotechnology*, chapter Nanorobotics for Synchrotron Radiation Applications, pages 1–19. Springer Netherlands, Dordrecht, 2nd edition.
- [15] Belharet, K., Folio, D., and Ferreira, A. (2012). *Real-time software platform for in vivo navigation of magnetic micro-carriers using MRI system*, chapter 11. Number 51 in Biomaterials. Woodhead Publishing, Cambridge.

国际会议

- [16] Mellal, L., Folio, D., Belharet, K., and Ferreira, A. (2016a). Estimation of interaction forces between two magnetic bolus-like microrobots. In *International Conference on Manipulation, Automation and Robotics at Small Scales (MARSS'2016)*, pages 1–6, Paris, France. IEEE.
- [17] Mellal, L., Folio, D., Belharet, K., and Ferreira, A. (2016c). Optimal control of multiple magnetic microbeads navigating in microfluidic channels. In *IEEE International Conference on Robotics and Automation (ICRA'2016)*, pages 1921–1926, Stockholm, Sweden. IEEE.

- [18] Lyès M., Folio, D., Belharet, K., and Ferreira, A. (2015). Magnetic Microbot Design Framework for Antiangiogenic Tumor Therapy. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2015)*, pages 1397-1402, Hamburg, Germany. IEEE.
- [19] Sarkis, B.; Folio, D. and Ferreira, A. (2015). Catalytic Tubular Microjet Propulsion Model for Endovascular Navigation. In *IEEE International Conference on Robotics and Automation (ICRA'2015)*, pages 3537-3542, Seattle, Washington, USA. IEEE.
- [20] Amari, N., Folio, D., and Ferreira, A. (2014). Robust nanomanipulation control based on laser beam feedback. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2014)*, pages 4674-4679, Chicago, IL, USA. IEEE.
- [21] Amari, N., Folio, D., and Ferreira, A. (2014). Robust tracking of a two-fingered micromanipulation system working through the focus of an optical beam. In *American Control Conference (ACC'2014)*, pages 1613-1618, Portland, OR, USA. IEEE.
- [22] Belharet, K., Folio, D., and Ferreira, A. (2014). Study on rotational and unclogging motions of magnetic chain-like microrobot. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2014)*, pages 834-839, Chicago, IL, USA. IEEE.
- [23] Belharet, K., Folio, D., and Ferreira, A. (2014). Vision-based forces characterization of magnetic microrobot in a viscous environment. In *IEEE International Conference on Robotics and Automation (ICRA'2014)*, pages 2065-2070, Hong Kong, China. IEEE.
- [24] Amari, N., Folio, D., Belharet, K., and Ferreira, A. (2013). Motion of a micro/nanomanipulator using a laser beam tracking system. In *International Symposium on Optomechatronic Technologies (ISOT'2013)*, Jeju Island, Korea. IEEE.
- [25] Amari, N., Folio, D., and Ferreira, A. (2013). Robust laser beam tracking control using micro/nano dual-stage manipulators. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2013)*, pages 1543-1548, Tokyo Big Sight, Japan.
- [26] Belharet, K., Chunbo, Y., Folio, D., and Ferreira, A. (2013). Model characterization of magnetic microrobot navigating in viscous environment. In *International Symposium on Optomechatronic Technologies (ISOT'2013)*.
- [27] Belharet, K., Folio, D., and Ferreira, A. (2012). Control of a magnetic microrobot navigating in microfluidic arterial bifurcations through pulsatile and viscous flow. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2012)*, pages 2559-2564, Vilamoura, Algarve, Portugal.
- [28] Dahmen, C., Folio, D., Wortmann, T., Kluge, A., Ferreira, A., and Fatikow, S. (2012). Evaluation of a MRI based propulsion/control system aiming at targeted micro/nano-capsule therapeutics. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2012)*, pages 2565-2570, Vilamoura, Algarve, Portugal.
- [29] Folio, D., Dahmen, C., Wortmann, T., Zeeshan, M. A., Shou, K., Pane, S., Nelson, B. J., Ferreira, A., and Fatikow, S. (2011). MRI magnetic signature imaging, tracking and navigation for targeted micro/nano-capsule therapeutics. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2011)*, pages 1297-1303, San Fransisco, CA, USA.
- [30] Kim, J., Chang, D., Ladjal, H., Folio, D., and Kim, A. F. J. (2011). Evaluation of telerobotic shared control for efficient manipulation of single cells in microinjection. In *IEEE International Conference on Robotics and Automation (ICRA'2011)*, pages 3382-3387, Shanghai, China.
- [31] Belharet, K., Folio, D., and Ferreira, A. (2010). 3D MRI-based predictive control of a ferromagnetic microrobot navigating in blood vessels. In *3rd IEEE RAS&EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob'2010)*, pages 808-813, Tokyo, Japan.
- [32] Belharet, K., Folio, D., and Ferreira, A. (2010). Endovascular navigation of a ferromagnetic microrobot using MRI-based predictive control. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2010)*, pages 2804-2809, Taipei, Taiwan.
- [33] Kermorgant, O., Folio, D., and Chaumette, F. (2010). A new sensor self-calibration framework from velocity measurements. In *IEEE International Conference on Robotics and Automation (ICRA'2010)*, pages 1524-1529, Anchorage, Alaska.