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Crazy-Research-2022-ATOM

AuTOnomous Biologically Powered Untethered Millirobots

Islam S. M. Khalil

University of Twente

July 26, 2023

Dissemination of ATOM | Publications

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Crazy-Research-2022 has been ackowledged in the following international peer reviewed publications:

- V. Magdanz, A. Klingner, L. Abelmann, and I.S.M. Khalil, “IRONSperm swimming by rigid-body rotation versus transverse bending waves influenced by cell membrane charge,” *Journal of Micro and Bio Robotics*, July 2023.
- L-J.W. Ligtenberg, I.A.A. Ekkelkamp, F.R. Halfwerk, C. Goulas, J. Arens, M. Warle and I.S.M. Khalil, “Helical propulsion in low-Re numbers with near-zero angle of attack,” in *Proc. IEEE/RSJ int. Conf. Intell Robot. & Sys.*, October 2023. Accepted.
- V. Magdanz, J.R. Cumming, S. Salamzadeh, S. Tesselaar, L. Alic, L. Abelmann and I.S.M. Khalil, “Influence of nanoparticle coating on the differential magnetometry and wireless actuation of biohybrid microrobots,” in *Proc. IEEE/RSJ int. Conf. Intell Robot. & Sys.*, October 2023. Accepted.

Dissemination of ATOM | International Events

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Crazy-Research-2022 has been ackowledged in the following international events:

- I.S.M. Khalil, “Microrobotics for minimally invasive medicine and nano technology applications,” *BioEl 2023 8th International Winterschool on Bioelectronics*, Linz, Austria, March 2023.
- L-J.W. Ligtenberg and I.S.M. Khalil, “Input-Output boundedness of a magnetically actuated helical device,” *IEEE Int. Conf. Robot. Autom*, ExCel, London, June 2023.

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Budget

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I have used ATOM's budget as follows:

- Materials and consumables: ∼16,435.45
- Personnel: ∼6,000 Junior researcher 0.2 fte.

The equipment, materials, and hardware that I have built will be the core of a new laboratory (Autonomous Microrobotics) that I hope to initiate soon when I secure a bigger grant. I have proposed this in my department (BE).

The End