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Abstract

Reinforcement Learning in Robotics for E-waste Recycling

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Abstract:

Electronic Waste (E-waste) is generated in a tremendous amount due to our increasing dependence on electronic devices and the rapid upgrading in technological innovations. As a result, environmental and health risks are posed from e-waste toxic constituents. Fortunately, e-waste contains valuable recoverable materials that make recycling tasks not only environmentally beneficial but also economically profitable. However, efficient recycling is a challenging task as most valuable components are lost in mechanical dismantling processes but it is adopted because of its convenience. Non-destructive dismantling techniques, on the other hand, offers the most efficient solution as they produce the highest value per unit mass, but they put human workers in hazardous situations and require an unfeasible amount of time. Therefore, the need for automation and robotic solutions in non-destructive techniques has emerged as these solutions will have the potential to save human health, accelerate the dismantling process and generate purer recycled materials. With the use of Reinforcement Learning and Computer Vision industrial manipulators will have the ability to disassemble any version of a given electronic device.

Biography:

Abd El Rahman Farhan has completed his Bachelor degree at the age of 24 years from Faculty of Engineering Ain Shams University. Currently, he is working as a Robotics Teaching Assistant at Mechatronics Department, Ain Shams.

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