

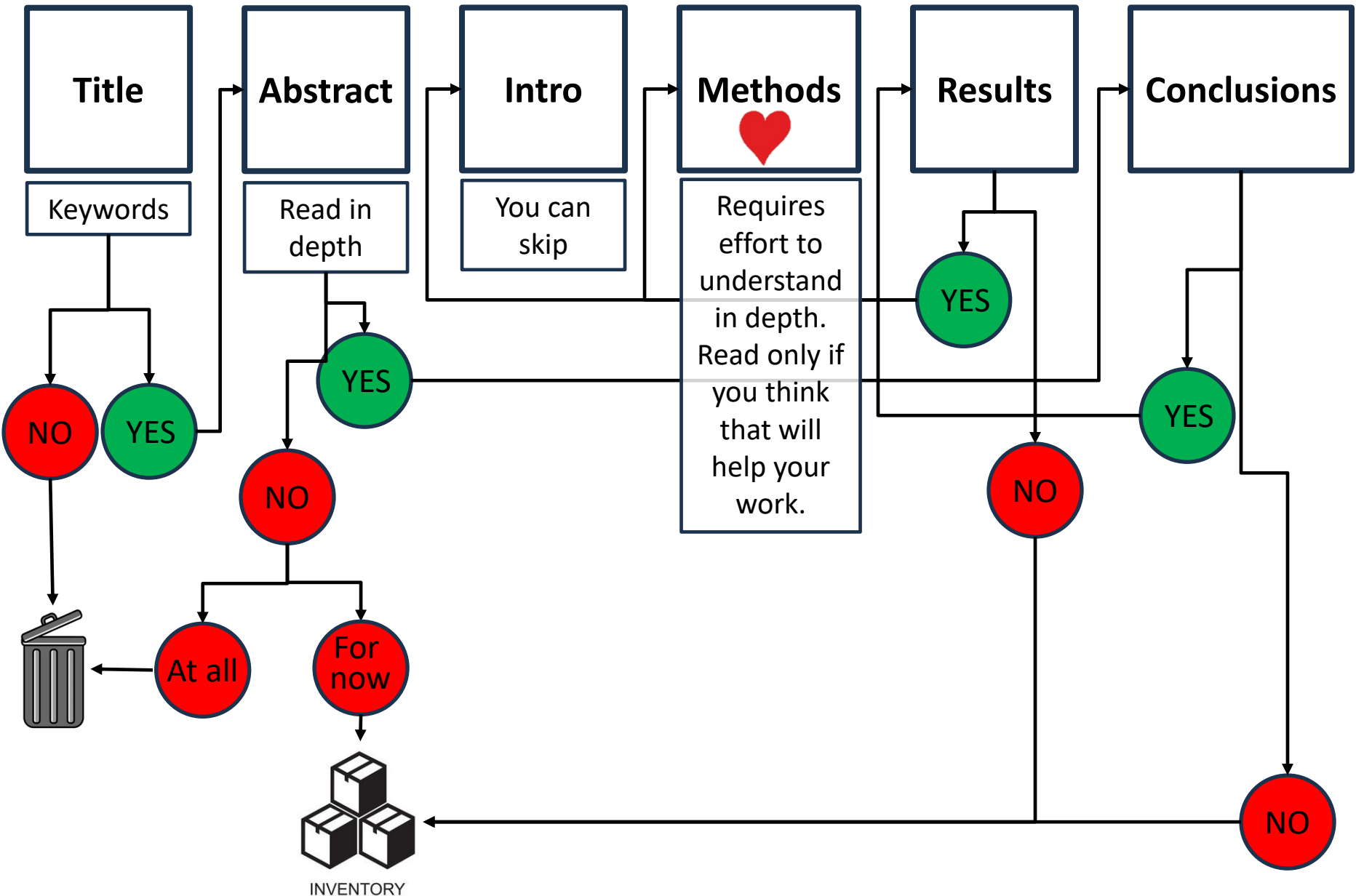
# Reading a paper efficiently

## Hints and Tips

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# Reading a paper efficiently



# Reading an abstract

## **Acoustic levitation with optimized reflective metamaterials**

The simplest and most commonly used acoustic levitator is comprised of a transmitter and an opposing reflecting surface. This type of device, however, is only able to levitate objects along one direction, at distances multiple of half of a wavelength. In this work, we show how a customised reflective acoustic metamaterial enables the levitation of multiple particles, not necessarily on a line and with arbitrary mutual distances, starting with a generic input wave. We establish a heuristic optimisation technique for the design of the metamaterial, where the local height of the surface is used to introduce delay patterns to the reflected signals. Our method stands for any type and number of sources, spatial resolution of the metamaterial and system's variables (i.e. source position, phase and amplitude, metamaterial's geometry, relative position of the levitation points, etc.). Finally, we explore how the strength of multiple levitation points changes with their relative distance, demonstrating sub-wavelength field control over levitating polystyrene beads into various configurations.

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Demonstrate results and future works...