# Intro to Robotics Lab

# Lab 08: Ch18. Emergent Behavior: Forming swarms: Following Light or Collective Transportation.

Estimated Time To Completion: *2 hours*Concepts to Explore: Emergent Behavior

### Introduction

* Load the Kilobot model.
* Understand the principles by which the Kilobot robot moves.
* Move the robot using the code.

### Preliminary Questions

1. What is *emergent behavior*?

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1. How can swarm behavior exist?  
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2. Explain simple rules of producing emergent behavior.

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### Instructions

1. Read Kilobot \_UserManual 4.3 Kilobots Usage.
2. Download Kilobot\_around.ttm and load the Kilobot model: Kilobot.ttm and Kilobot\_Controller.ttm.
3. Move Kilobot of kilobit\_arround.ttm and explain how its movement is generated.(Hint: Here is some web page for you to understand what swarms is: <http://www.ifanr.com/news/443191>)
4. Create a new script and let the Kilobots forms swarms and go together.

(hint: you only need to change some functions of the demo script instead of writing a total new one).

1. Bonus：Repeat the prior steps to move Kilobot in a circle.

### Post-experiment Questions and Further Examination.

1. What else can emergent behavior do?
2. What are strengths and weaknesses of this approach?
3. How can Swarm Intelligence apply to robots?