Cairo University Computer Engineering

Faculty of Engineering First Year

Robotics

Under Supervision of :

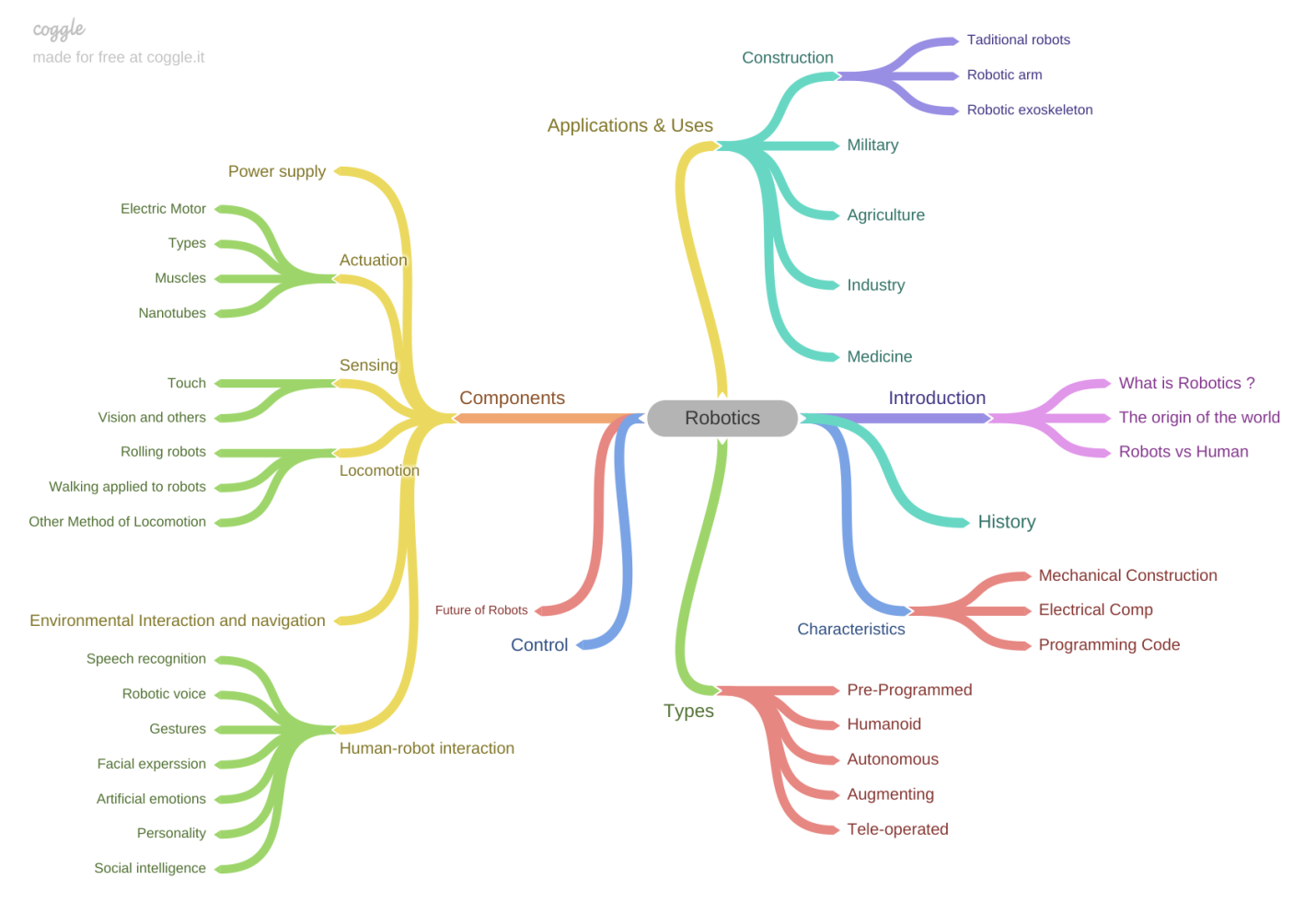
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Prepared By:

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2020

Robotics Outline

**Thesis**: Robotics is a technology that combines science and engineering (mechanical ,electronic , computer) and others.

**1. Introduction.**  
 1.1. What is robotics?  
 1.2. The origin of the word " robotics "(Etymology).  
 1.3. In which way robots are better than humans?  
**2. History of robotics.  
3. Robots characteristics.** 3.1. Mechanical construction.  
 3.2. Electrical components.  
 3.3. Programming code.  
**4. Types of robots.**  
 4.1. Pre-programmed robots.  
 4.2. Humanoid robots.  
 4.3. Autonomous robots.  
 4.4. Tele-operated robots.  
 4.5. Augmenting robots.  
 **5. Applications and Uses of robots.**  
 5.1. Military.  
 5.2. Industry.  
 5.3. Construction.  
 5.3.1. Traditional robots.  
 5.3.2. Robotic arm.  
 5.3.3. Robotic exoskeleton.  
 5.4. Medicine.  
 5.5. Agriculture.  
**6. Components.** 6.1. Power supply.  
 6.2. Actuation.  
 6.2.1. Electric motor.  
 6.2.2. Types of actuators .  
 6.2.3. Muscles.  
 6.2.4. Nanotubes.  
 6.3 Sensing.  
 6.3.1. Touch.  
 6.3.2 Vision and others.  
 6.4. Manipulation.  
 6.5. Locomotion.  
 6.5.1. Rolling robots.  
 6.5.2. Walking applied to robots .  
 6.5.3. Other methods of locomotion.  
 6.6. Environmental interaction and navigation.  
 6.7. Human-robot interaction.  
 6.7.1. Speech recognition.  
 6.7.2. Robotic voice.  
 6.7.3. Gestures.  
 6.7.4. Facial expression .  
 6.7.5. Artificial emotions .  
 6.7.6. Personality.  
 6.7.7. Social Intelligence.  
**7. Control.  
8. The future of robots and robotics.   
9. Conclusion.**