

## I. INTRODUCTION

~~The purpose of motor controls are to control the~~ The torque, speed, and position of a motor ~~are controlled~~ using a motor controller. ~~Because the~~ Torque generated by of the motor is proportional to the amount of current ~~flowing through it~~; therefore, directly torque control ~~was is~~ very rarely used. In ~~almost every~~ most applications, cascade control structure is used ~~as show in~~ (Fig. 1).

~~)~~. This means that the ~~The drive~~ electronic ~~drives that supplies~~ that controls the electrical energy supplied to the motor ~~receives gets~~ the control signals from the current controller, ~~that which~~ gets receives its set point ~~its setpoint~~ from the speed controller ~~etc~~. The current controller is ~~called the~~ drive-specific, ~~since~~ because its operation is ~~greatly considerably effected~~ affected by the type of the motor. The position and speed ~~controller~~ controllers are ~~called~~ task-specific because ~~it is they are~~ more considerably affected by the ~~motor-driven~~ machine ~~being driven by the motor~~.

**Comment [A1]:** In American English, a comma (called serial or oxford comma) is inserted before "and" in a series.

**Comment [A2]:** Writers use tense shifts to convey a desired meaning to the reader. These tense shifts must be a logical progression of ideas. It is common to see the present, present perfect, and past tenses in the same sentence or paragraph. However, unnecessary shifts in tense can confuse a reader and may not suit the context of the article.

**Comment [A3]:** In American English, "that" is used to introduce a restrictive clause and "which" a nonrestrictive clause.

**Comment [A4]:** To avoid ambiguity and miscommunication, place adverbs such as only, also, almost, simply, particularly, considerably next to the word it modifies.

**Comment [A5]:** The compound modifier is hyphenated when it appears before a noun in order to prevent any ambiguity.

## II. FUNDAMENTALS OF MOTOR CONTROLLERS

~~In contrast to position controller or speed controller, it is not necessary to use all three of the controls in all applications. In some cases position or speed control is not needed but~~ current controller is used in ~~every all ease~~ applications. ~~The reason of this is that the current control is not only because it ensuring~~ ensures stable and controlled torque ~~generation and current supply~~ but giving the possibility to limit the current of the machine, and with this function, it is able to be protected ~~to prevent motor from~~ overload [3]. ~~The three controllers run at different speeds. For example the current controller is way faster than the speed controller.]~~

~~The~~ Feedback values of the ~~controllers~~ controllers have to ~~must~~ be measured. ~~Measuring the~~ Current can be ~~completed measured with using~~ a shunt resistor or a Hall ~~Effect effect~~ current transducer, ~~whereas~~ For speed and position ~~measurement can be measured using~~ quadrature encoders ~~can be used~~ [7][10]. ~~For position control usually proportional (P) or rarely proportional differential (PD) controllers are used. The three controllers operate at different speeds; for example, the current controller is considerably faster than~~

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~~the speed controller. The type of the speed controller is usually p~~Proportional ~~integral (PI) controller is~~  
~~commonly used as a speed controller. For position control, usually proportional (P) controllers, or rarely~~  
~~proportional–differential (PD) controllers, are used. We can get the current control with proportional–~~  
~~integral (PI) or hysteresis~~ ~~hysteresys~~ controllers ~~can be used for current control~~ [8-].

**Comment [A6]:** The en dash is used in place of a hyphen in cases where the paired elements carry equal weight or represent a parallel relationship such as Carbon–Magnesium bond or Bose–Einstein statistics.

SAMPLE