



دانشگاه آزاد اسلامی  
تهران



انجمن مهندسی  
ساخت و تولید ایران

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دانشگاه آزاد اسلامی  
واحد نجف آباد  
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دانشگاه آزاد اسلامی  
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## ساخت عامل نهائی برای ربات گوجه چین

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Matlab

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[ ] [ ]

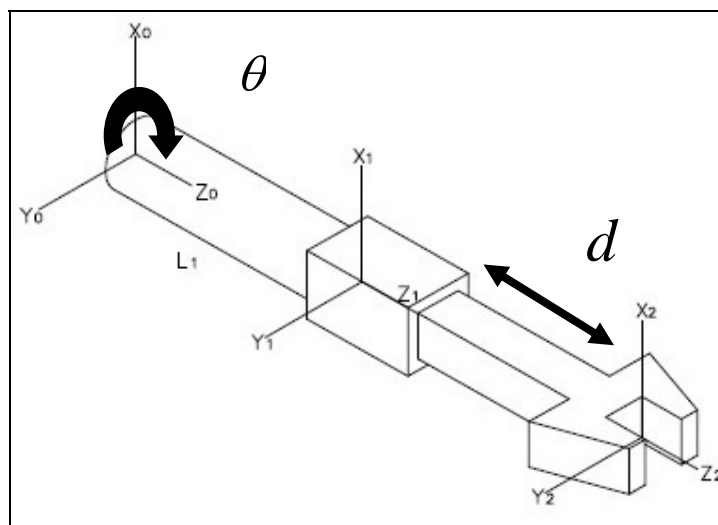
[ ] [ ] [ ] [ ] [ ]

Mechanical

desktop

( )

$\theta$   $L_1$  ( )



$d$   
[ ] ( )

$$T_2^0 = \begin{bmatrix} c & -s & 0 & 0 \\ s & c & 0 & 0 \\ 0 & 0 & 1 & d + L_1 \\ 0 & 0 & 0 & 1 \end{bmatrix} \quad ( )$$

Mathematica

[ ] ( ) ( )

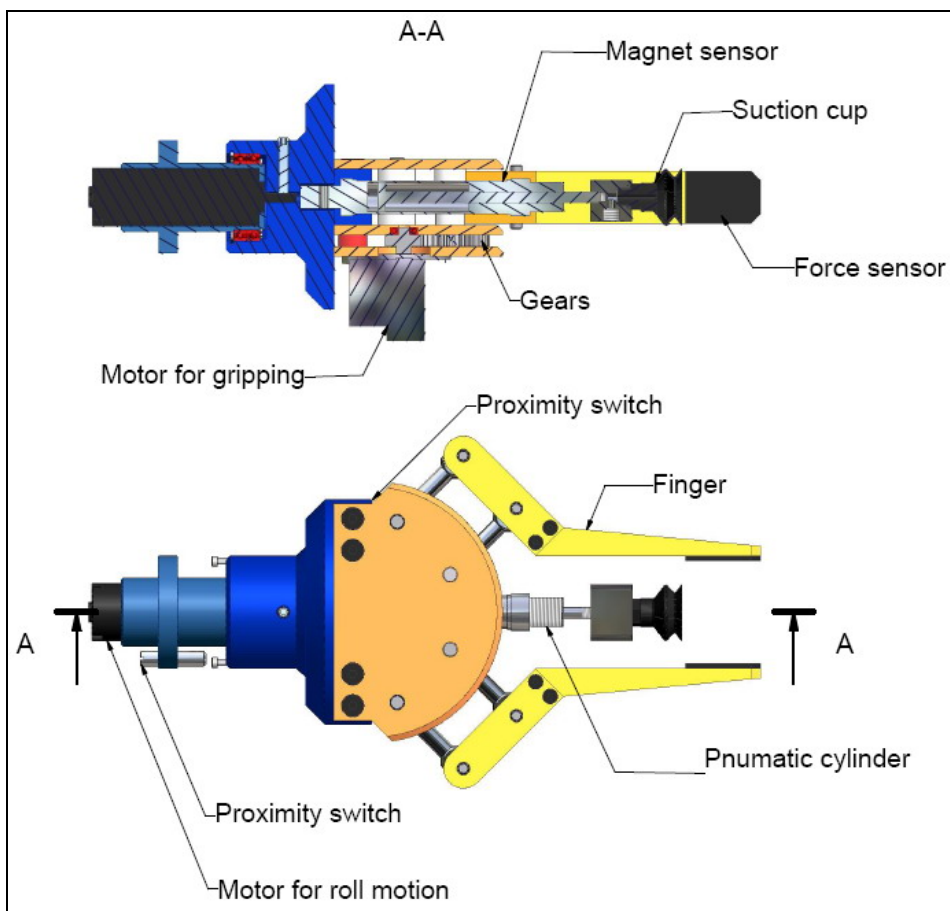
$$\tau_1 = 0.004\theta^{00} + 0.145\text{Sin}(\theta) \quad ( )$$

$$F_2 = 0.068d^{0.0} \quad ( )$$

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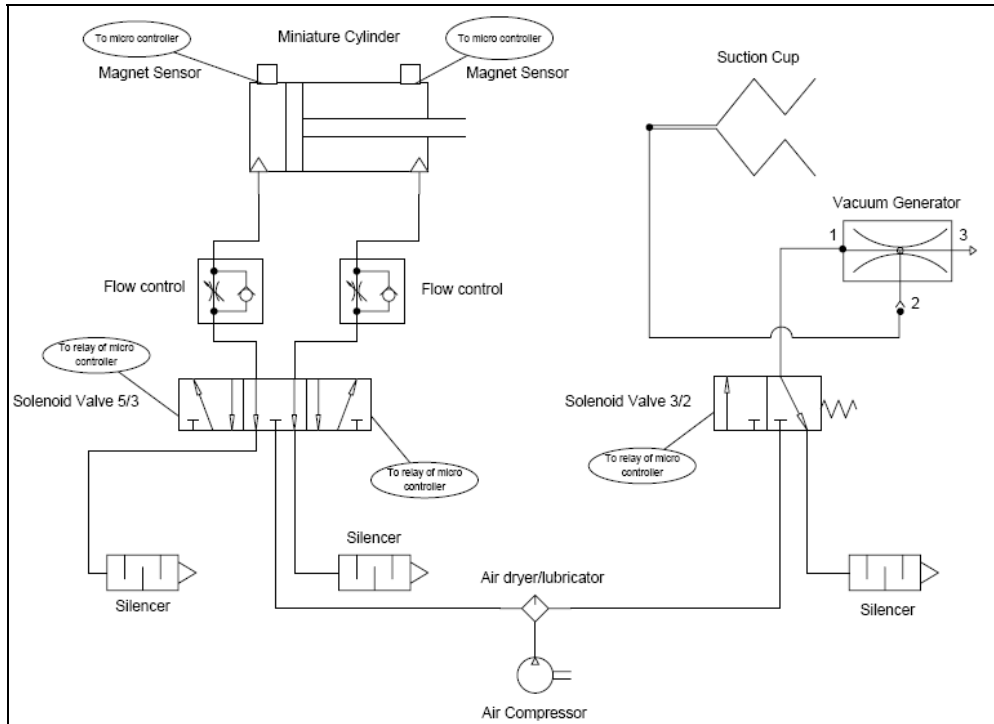
[ ]



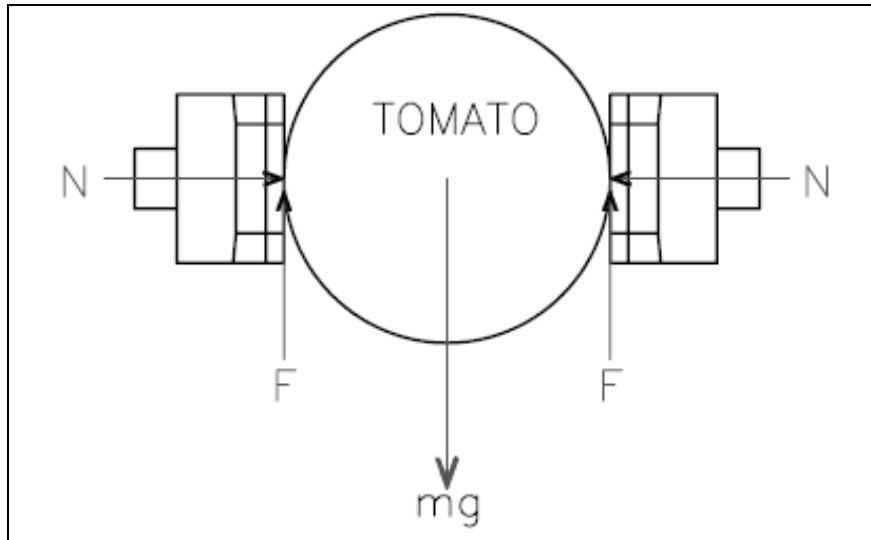
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( ) ( )



( ) N ( )

[ ] /

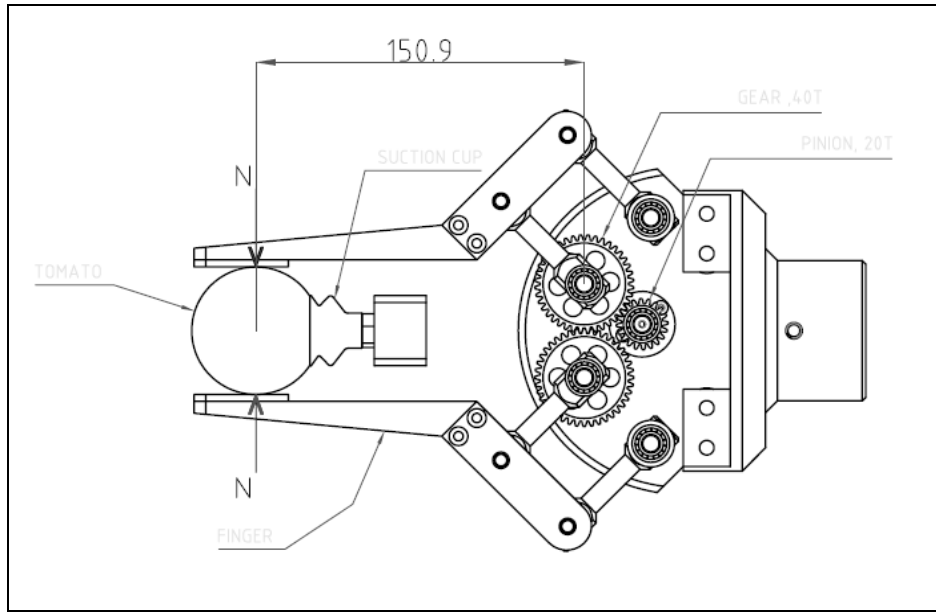
$$\text{if } \left\{ \begin{array}{l} \mu = 0.5 \\ m = 150.g \end{array} \right\} \Rightarrow \left\{ \begin{array}{l} 2F = mg \\ F = \mu N \end{array} \right\} \Rightarrow 2\mu N = mg \Rightarrow 2\mu N = 1/47 \Rightarrow N = 1/47N \quad ( )$$

F ( / ) g ( ) m ( )  $\mu$  ( )  
 /  
 ( ) [ ]  
 N

$$T = N \times L \Rightarrow T = 1/47 \times 150.9 = 221.8 N.mm \quad ( )$$

L

T ( )



$(T_m)$

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$$\frac{T}{T_m} = \frac{40}{20} = 2 \Rightarrow T_m = 111N.mm \quad ( )$$

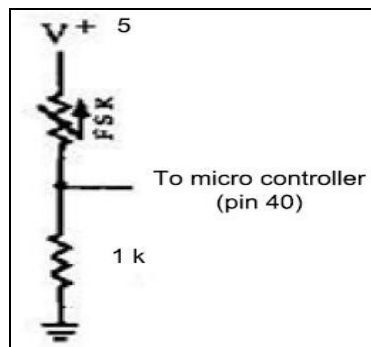
(Force sensing resistor) FSR

A

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(

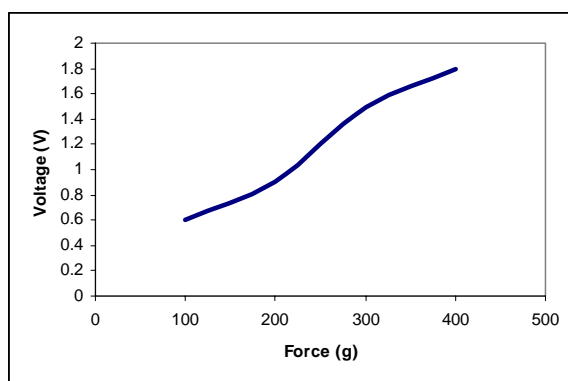


(Vout)

1KΩ

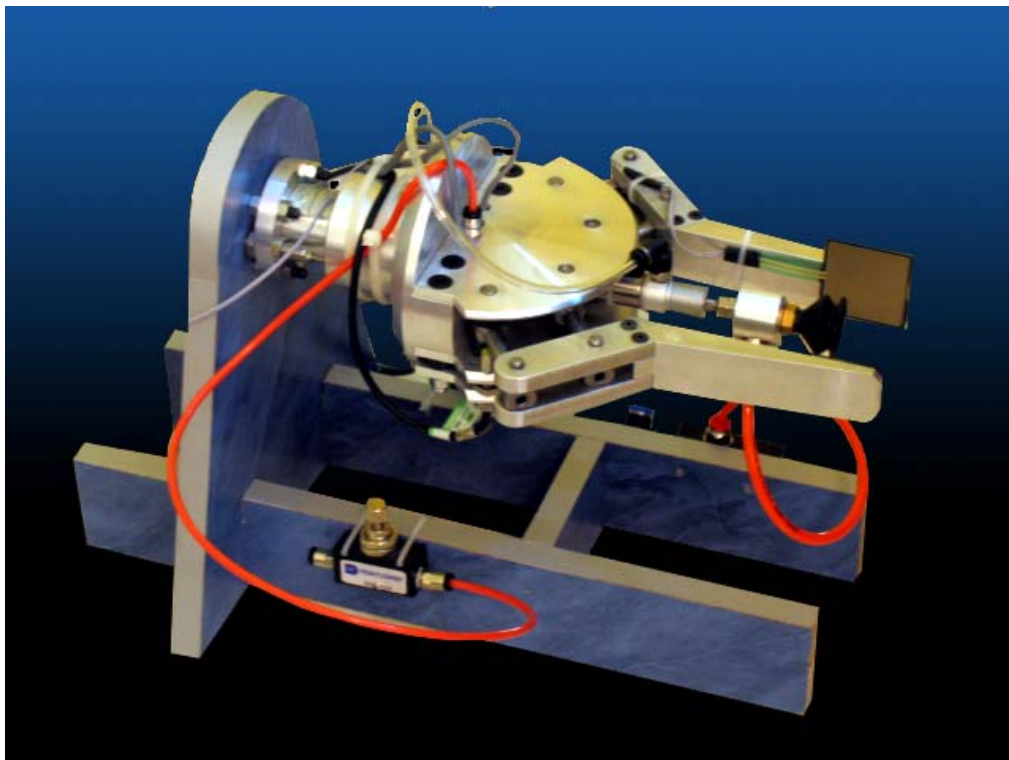
$$V_{out} = \frac{1}{(1 + R_{FSR})} \times (5) \quad ( )$$

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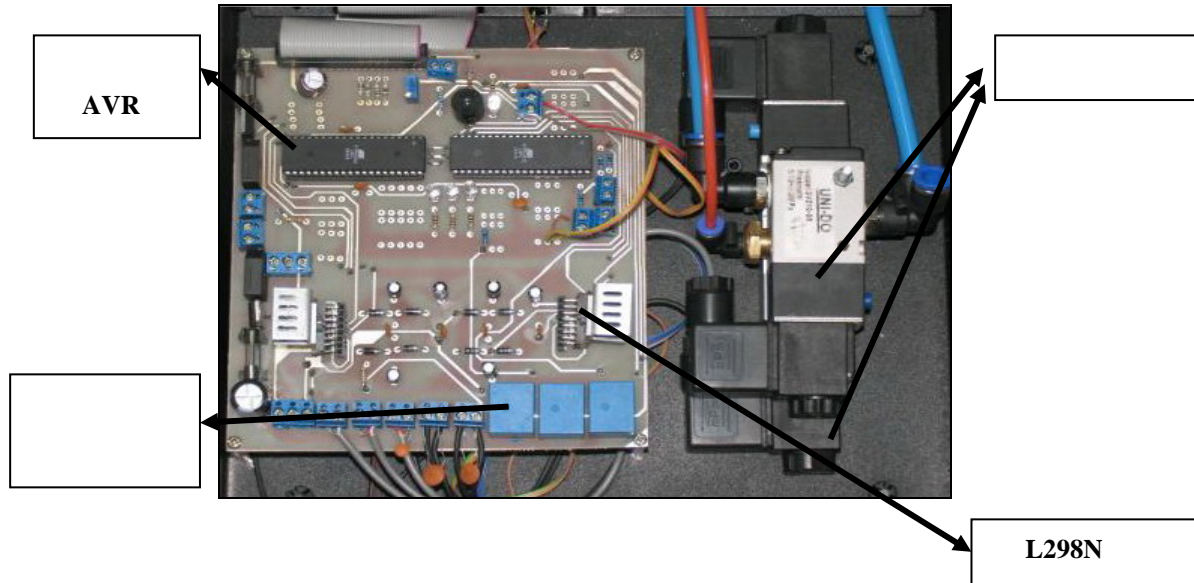
[ ] (AVR)

L298N

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(Codevision AVR)

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