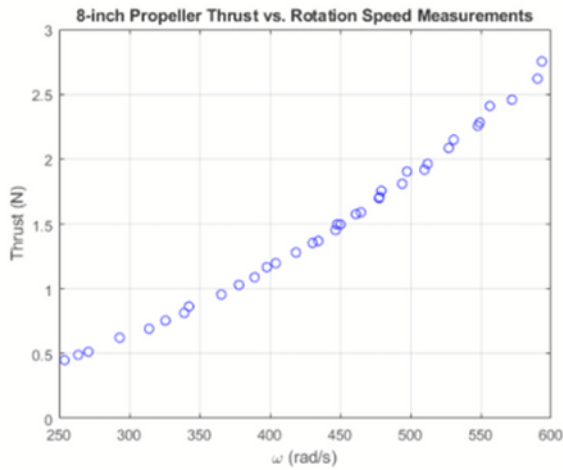


Propeller Thrust Model

The plot below shows some experimental measurements for the force (thrust) generated by a small propeller when spinning at various rotation speeds.



The thrust T at a given propeller rotation speed can be modeled as

$$T = k_t \omega^2$$

where k_t is a constant and ω is the rotation speed. Three variables are loaded for you from the file `thrust_data`: `thrust` and `omega` vectors with experimental thrust measurements and corresponding values of rotation speed, and the scalar `kt` determined by least squares optimization.

1. Create the thrust model vector T using the provided constant k_t and vector ω as `thrust_model`.
2. Find the vector of the absolute difference between the noisy measurements in `thrust` and our model `thrust_model` as `err`

Script ?

[Reference Solution](#)[Save](#)[Reset](#)[MATLAB Documentation](#)

```
1 % Load thrust, omega and kt
2 load thrust_data
3
4 % create Thrust_model Vector
5 thrust_model = kt*omega.^2;
6
7 % Compute the error
8 err = abs(thrust_model - thrust);
9
10
11 % Uncomment plotting code below when ready to visualize results
12 plot(omega,thrust,'bo',omega,thrust_model,'r'); xlabel('\omega (rad/s)'); ylabel('Thrust (N)'); grid;
13 figure; plot(omega,err,'ko'); xlabel('\omega (rad/s)'); ylabel('|Thrust Difference| (N)'); grid;
```

[Run Script](#)

Assessment: All Tests Passed

[Submit](#)

✔ Is the thrust model prediction correct?

✔ Is the thrust model error correct?

Output

