

```
1 function [Displacement, Force] = Menegotto_Pinto(U_conv, MatData, MatState)
2 % Runs the Menegotto Pinto Model with given converged displacements
3 spacing = 100; % Linearly interpolates 100 points between each converged displacement
4 length_of_U = numel(U_conv); % Amount of displacements
5 Displacement = zeros(1,length_of_U*spacing-spacing); % zero vector for newly interpolated points
6 Force = Displacement; % zero vector
7
8 for i = 1:length(U_conv)-1
9     Displacement(i*spacing - spacing + 1 : i*spacing) = linspace(U_conv(i),U_conv(i+1),spacing); % Interpolateion with linspace
10 end
11 eps = Displacement/MatData.L; % Converts to strain history
12
13 for n = 1:numel(eps)
14     MatState.eps(1,1) = eps(n);
15     if n == 1
16         MatState.eps(1,2) = 0;
17     else
18         MatState.eps(1,2) = eps(n)-eps(n-1); % Change in strain is change in strain
19     end
20     MatState = Mate25n(MatData,MatState); % Runs the Menegotto
21     Force(n) = MatState.Pres.sig * MatData.A; % Calculates the force for the iteration
22     MatState.Past = MatState.Pres; %Updates the state
23 end
24 end
```