Matlab Code for Pulse Width Modulation and Pulse Position Modulation

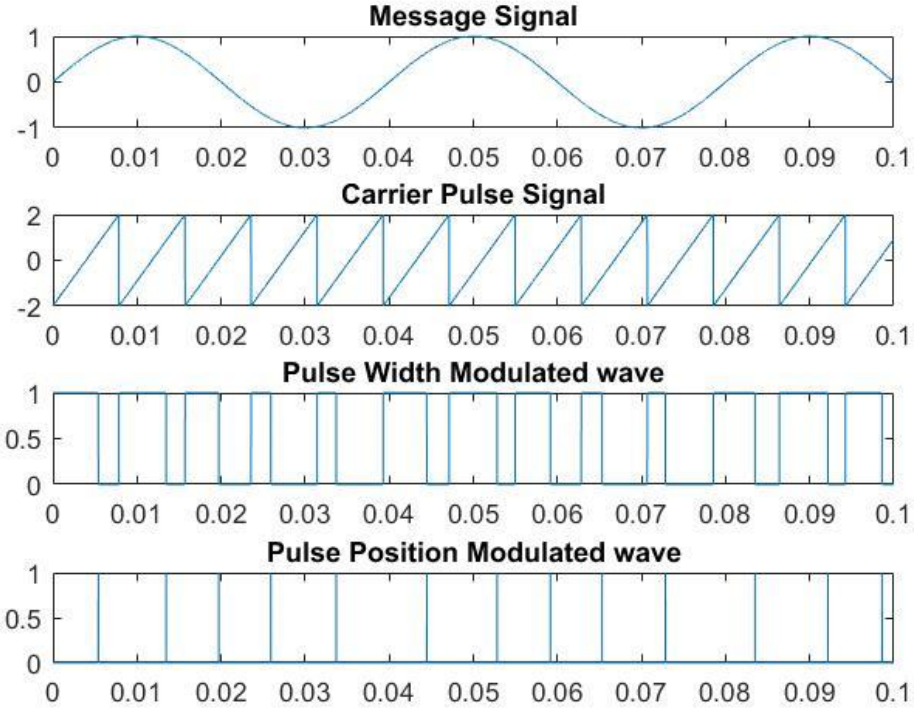
```
fm=25;
w=2*pi;
f=300;
overSampRate=650;
fs=overSampRate*f;
cycle=50;
t=0:1/fs:0.1;

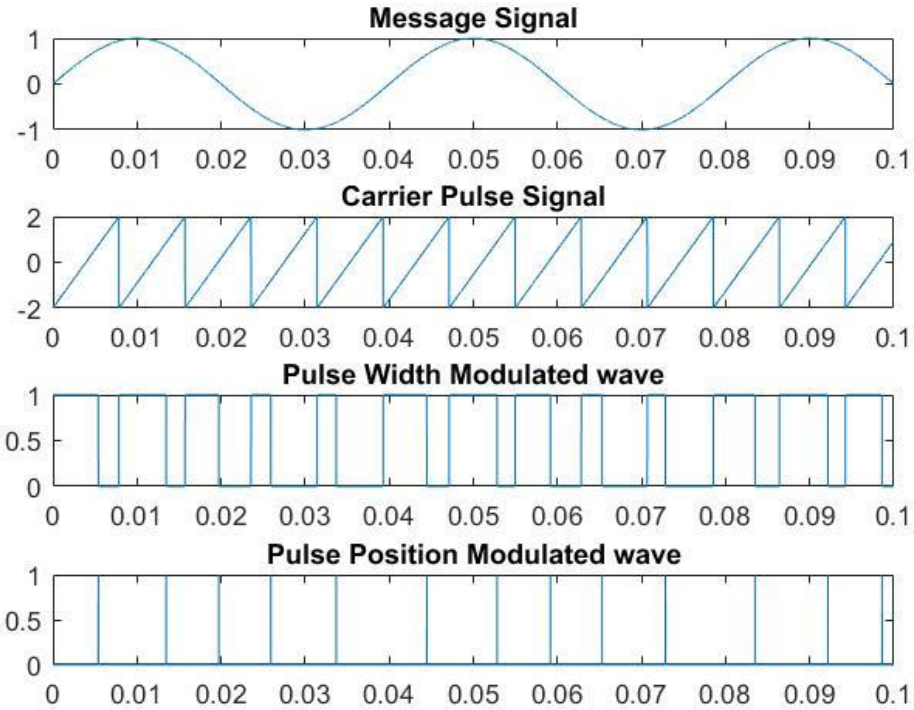
%%Message Signal
xm= sin(w*fm*t);
subplot(4,1,1);
plot(t,xm);
title('Message Signal');

%%Carrier Pulse Signal
xc=2*sawtooth(800*t);
subplot(4,1,2);
plot(t,xc);
title('Carrier Pulse Signal');

%%Pulse Width Modulation
for i= 1:length(t)
    if xc(i) <= xm(i)
        pw(i)=1;
    else
        pw(i)=0;
    end
end
subplot(4,1,3);
plot(t,pw);
title('Pulse Width Modulated wave');

%%Pulse Position Modulation
pp(1)=0;
for i=2:length(t)
    if pw(i)==pw(i-1)
        pp(i)=0;
    elseif pw(i) < pw(i-1)
        pp(i)=1;
    end
end
subplot(4,1,4)
plot(t,pp)
title('Pulse Position Modulated wave');
```


Message Signal
1
0
-1
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1
Carrier Pulse Signal
2
0
-2
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1
Pulse Width Modulated wave
1
0.5
0
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1
Pulse Position Modulated wave
1
0.5
0
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1


Message Signal
1
0
-1
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1
Carrier Pulse Signal
2
0
-2
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1
Pulse Width Modulated wave
1
0.5
0
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1
Pulse Position Modulated wave
1
0.5
0
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1

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        pw(i)=1;
    else
        pw(i)=0;
    end
end
subplot(4,1,3);
plot(t,pw);
title('Pulse Width Modulated wave');

%%Pulse Position Modulation
pp(1)=0;
for i=2:length(t)
    if pw(i)==pw(i-1)
        pp(i)=0;
    elseif pw(i) < pw(i-1)
        pp(i)=1;
    end
end
subplot(4,1,4)
plot(t,pp)
title('Pulse Position Modulated wave');
```