

ANNEXE

Le programme de la simulation en MATLAB

```
function [sys,x0,str,ts]=Commande_7(t,x,u,flag)
Fs=100e3;
Ts=1/Fs;
T=0.02;
w=314.16;
load netbest      %Réseau de Neurones -----
if flag==0

    sys(1)=0;
    sys(2)=0;
    sys(3)=12;
    sys(4)=1;
    sys(5)=0;
    sys(6)=1;
    sys(7)=1;
    str = [];
    x0  = [];
    ts  = [Ts 0];

elseif flag==3
    %---- Application de Réseau de Neurones pour calculer les Angles de
                                commutation -----

    r = u(1);
    alpha= sim(net,r);

    alpha1= alpha(1) ;
    alpha2= alpha(2) ;
    alpha3= alpha(3) ;
    %-----

    t1=alpha1*pi/(180*w);
    t2=alpha2*pi/(180*w);
    t3=alpha3*pi/(180*w);

    % Bras 1 -----

    tt=mod(t,T);

    if (tt >= t1 && tt <= (T/2)-t1)
        S1=1;
    else
        S1=0;
    end
    if (tt >= (T/2)+t1 && tt <= T-t1)
        S2=1;
    else
        S2=0;
    end
    if (tt >=t2 && tt <= (T/2)-t2) || (tt >= (T/2)+t2 && tt <= T-t2)
        S5=1;
    else
        S5=0;
    end
    if (tt >= t3 && tt <= (T/2)-t3) || (tt > (T/2)+t3 && tt <= T-t3)
        S7=1;
    else
        S7=0;
    end
end
```

ANNEXE

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% Bras 2 -----

tt=mod(t-(T/3),T);

    if (tt >= t1 && tt <= (T/2)-t1)
        S12=1;
    else
        S12=0;
    end
    if (tt >= (T/2)+t1 && tt <= T-t1)
        S22=1;
    else
        S22=0;
    end
    if (tt >=t2 && tt <= (T/2)-t2) || (tt >= (T/2)+t2 && tt <= T-t2)
        S52=1;
    else
        S52=0;
    end
    if (tt >= t3 && tt <= (T/2)-t3) || (tt > (T/2)+t3 && tt <= T-t3)
        S72=1;
    else
        S72=0;
    end

% Bras 3 -----

tt=mod(t-(2*(T/3)),T);

    if (tt >= t1 && tt <= (T/2)-t1)
        S13=1;
    else
        S13=0;
    end
    if (tt >= (T/2)+t1 && tt <= T-t1)
        S23=1;
    else
        S23=0;
    end
    if (tt >=t2 && tt <= (T/2)-t2) || (tt >= (T/2)+t2 && tt <= T-t2)
        S53=1;
    else
        S53=0;
    end
    if (tt >= t3 && tt <= (T/2)-t3) || (tt > (T/2)+t3 && tt <= T-t3)
        S73=1;
    else
        S73=0;
    end

sys=[S1;S2;S5;S7;S12;S22;S52;S72;S13;S23;S53;S73];

else

sys=[];

end
```