APPENDIX I
THE OCULAR REMOVAL CODE

Program 4.1

```
eeg=data{1}{4}(3,:);
eeg= bpf(59.5, 60.5, 250, eeg, 't', 1);
eeg= bpf(59.5, 60.5, 250, eeg, 't', 1);
eog=data{1}{4}(7,:);
eog= bpf(59.5, 60.5, 250, eog, 't', 1);
eog= bpf(59.5, 60.5, 250, eog, 't', 1);
nfilt=fir1(4,0.064,'high'); % Fourth order lowpass filter.
d=filter(nfilt,1,eeg); % desired signal.
coeffs = zeros(1,5); % Set the filter initial conditions.
mu = 0.0005;            % Set step size for algorithm update.
ha = adaptfilt.lms(5,mu);
set(ha,'coefficients',coeffs);
set(ha,'persistentmemory',true); % Prevent filter reset.
[y,e] = filter(ha,eog,d);
lam = 1;            % Set weighting factor for algorithm update.
h = adaptfilt.rls(5,lam);
set(h,'coefficients',coeffs);
set(h,'persistentmemory',true); % Prevent filter reset.
[yy,ee] = filter(h,eog,d);
```

Program 4.2

```
eeg=data{1}{4}(3,:);
eeg= bpf(59.5, 60.5, 250, eeg, 't', 1);
eeg= bpf(59.5, 60.5, 250, eeg, 't', 1);
lev = 5;
x_hesy = wden(eeg(1:2400),'heursure','s','one',lev,'sym8');
x_misy = wden(eeg(1:2400),'minimaxi','s','one',lev,'sym8');
x_sqsy = wden(eeg(1:2400),'sqtwolog','s','one',lev,'sym8');
```

Program 4.3

```
clc
eeg=data{1}{4}(3,:);
eeg= bpf(59.5, 60.5, 250, eeg, 't', 1);
eeg= bpf(59.5, 60.5, 250, eeg, 't', 1);
eog=data{1}{4}(7,:);
eog= bpf(59.5, 60.5, 250, eog, 't', 1);
eog= bpf(59.5, 60.5, 250, eog, 't', 1);
lev=5;
xhe = wden(eeg(1:2400),'heursure','s','one',lev,'sym8');
nfilt=fir1(4,0.064,'high'); %
d=filter(nfilt,1,xhe);
lam = 1;            % Set weighting factor for algorithm update.
h = adaptfilt.rls(5,lam);
[yy,ee] = filter(h,eog(1:2400),d);
```