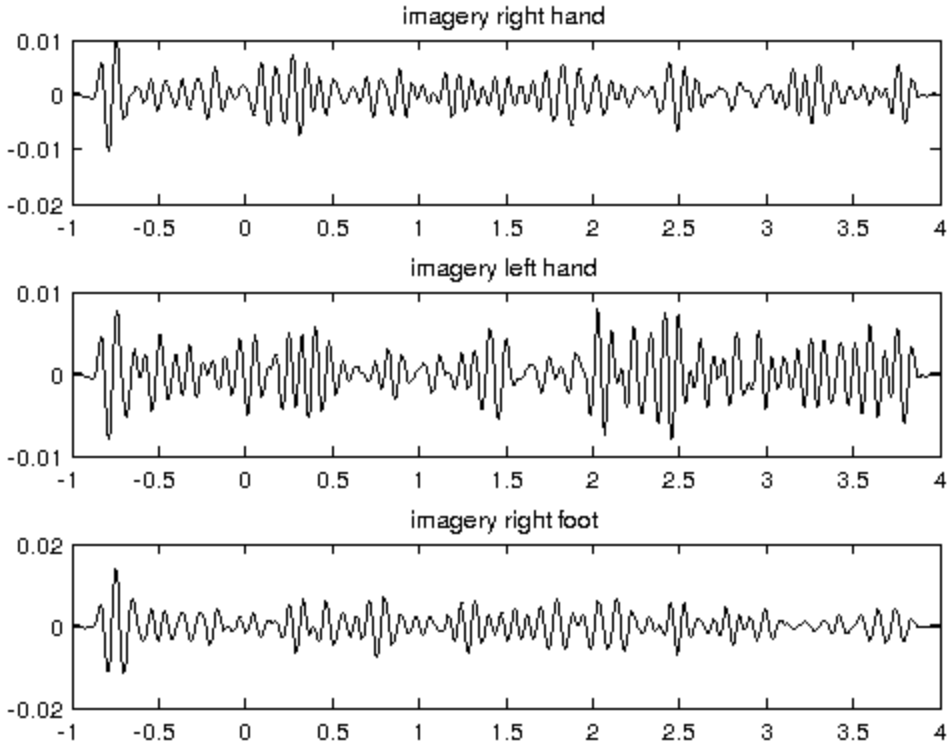
ERP

```
class = unique(Information.class_output);

for c = 1:length(class)
    class_logic = Information.class_output == class(c);
    class_logic = class_logic(:);
    average(:,:,:,c) = mean(Signal(:,:,:,class_logic),4);

end

time = linspace(-1,4,Information.SignalSize(1));

% C3
display('Channel C3');
for i= 1:4
    figure(i)
    for c = 1:length(class)
        colormap(gray);
        subplot(3,1,c);
        plot(time,average(:,26,i,c),'k');
        title(Information.class_label{c});
    end
end

% Cz
display('Channel Cz');
for i= 1:4
    figure(i + 4)
    for c = 1:length(class)
        colormap(gray);
        subplot(3,1,c);
        plot(time,average(:,28,i,c),'k');
        title(Information.class_label{c});
    end
end

% C4
display('Channel C4');
for i= 1:4
    figure(i+8)
    for c = 1:length(class)
        colormap(gray);
        subplot(3,1,c);
        plot(time,average(:,30,i,c),'k');
        title(Information.class_label{c});
    end
end
```

```
Channel C3
Channel Cz
Channel C4
```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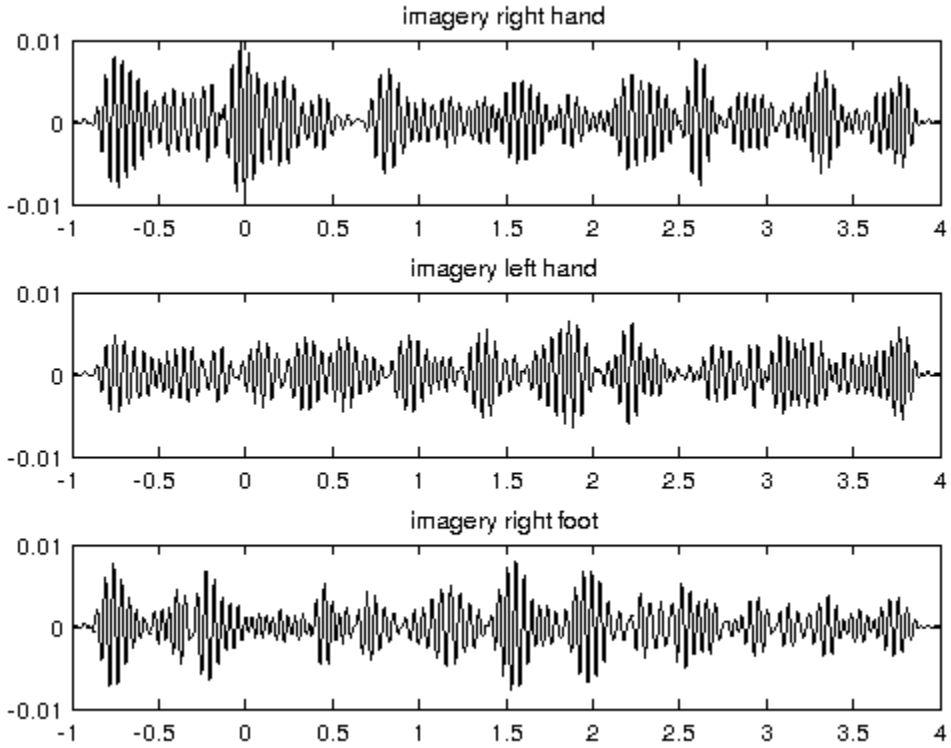
imagery left hand
imagery right foot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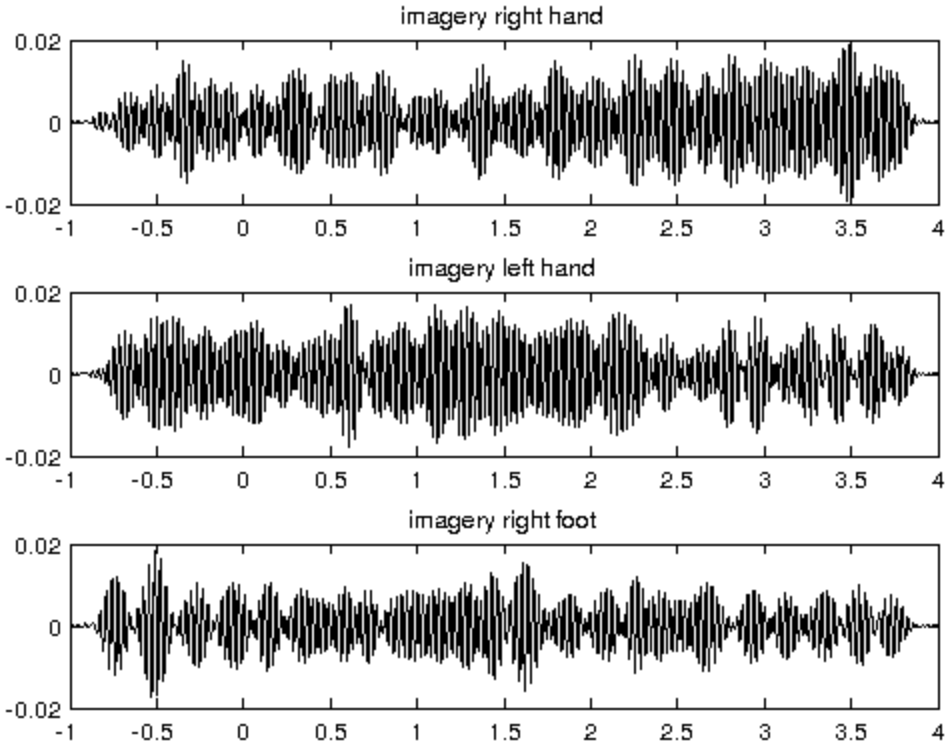
imagery left hand
imagery right foot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imagery left hand
imagery right foot
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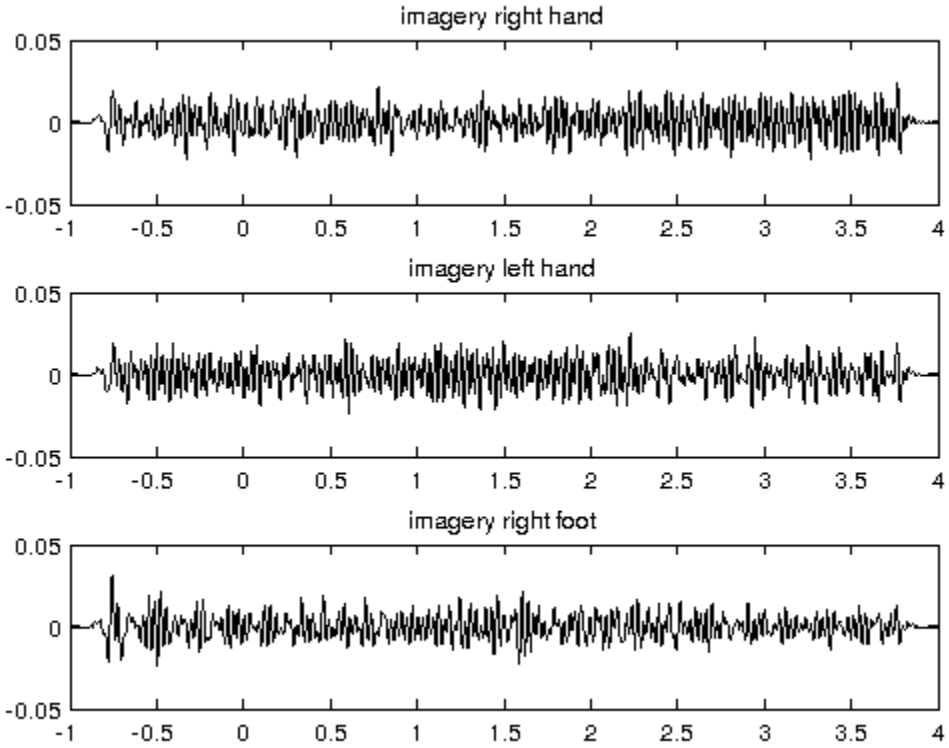
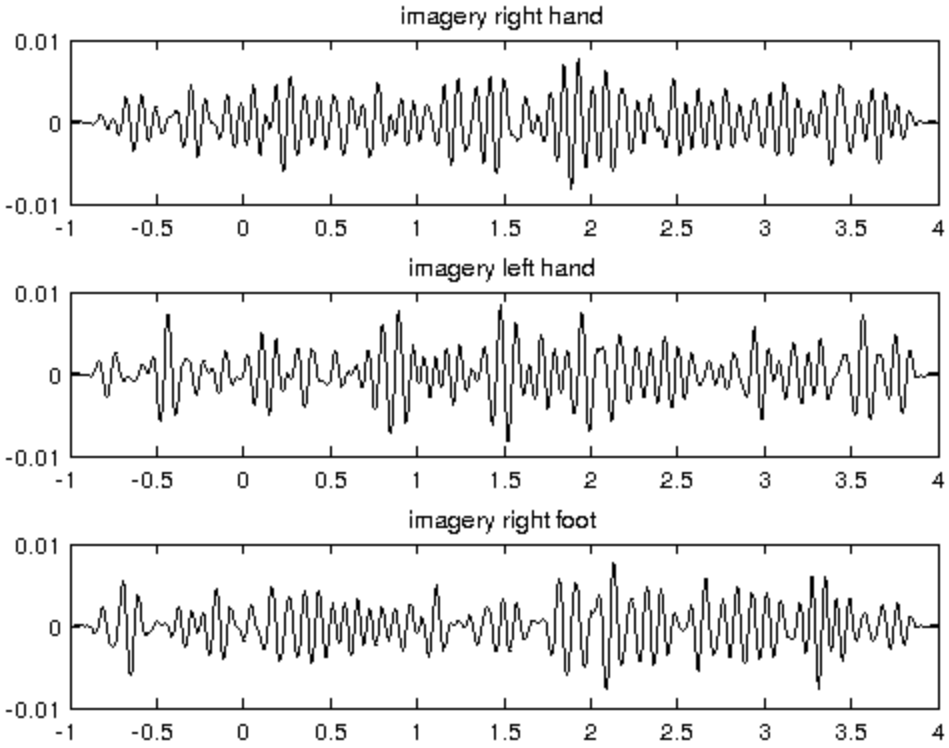
0
-0.02
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4


imagery right hand
imagery left hand
imagery right foot
0.05
0
-0.05
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4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imagery left hand
imagery right foot
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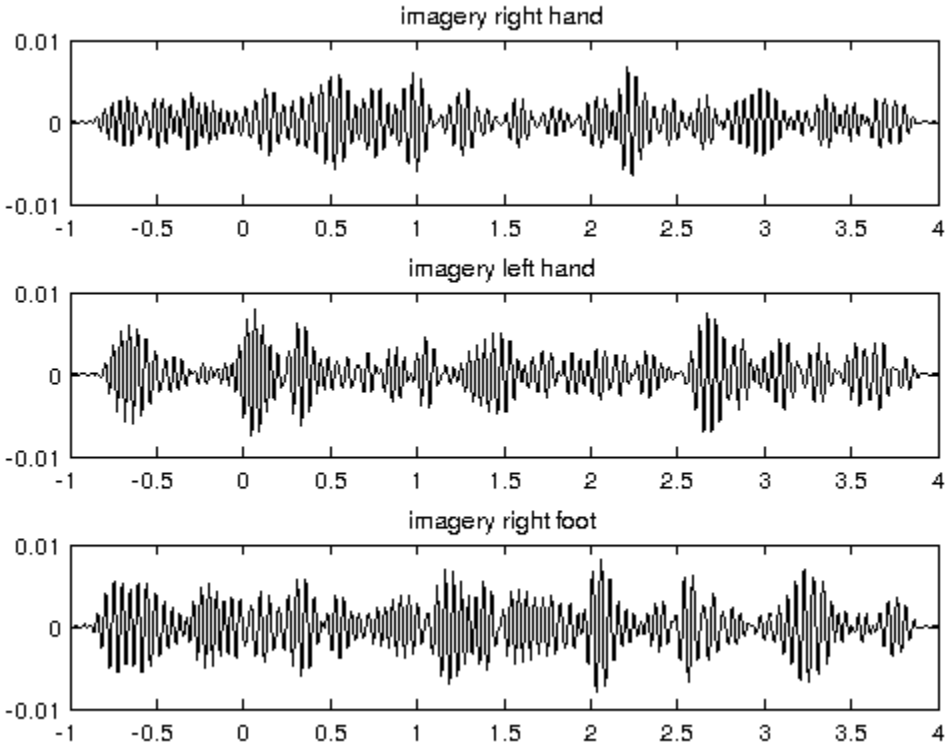
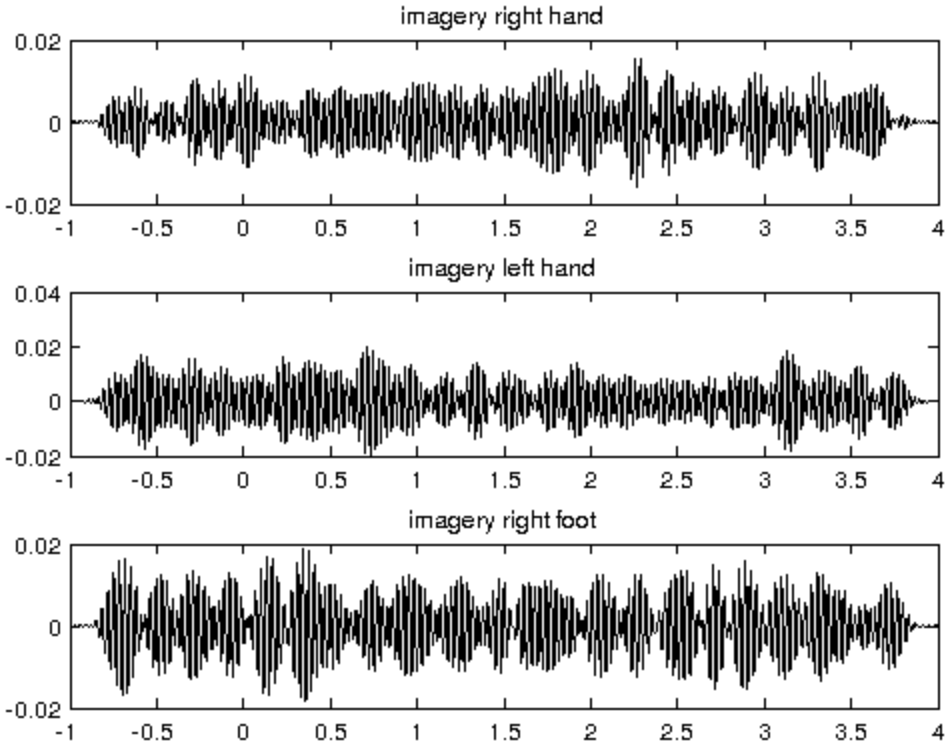
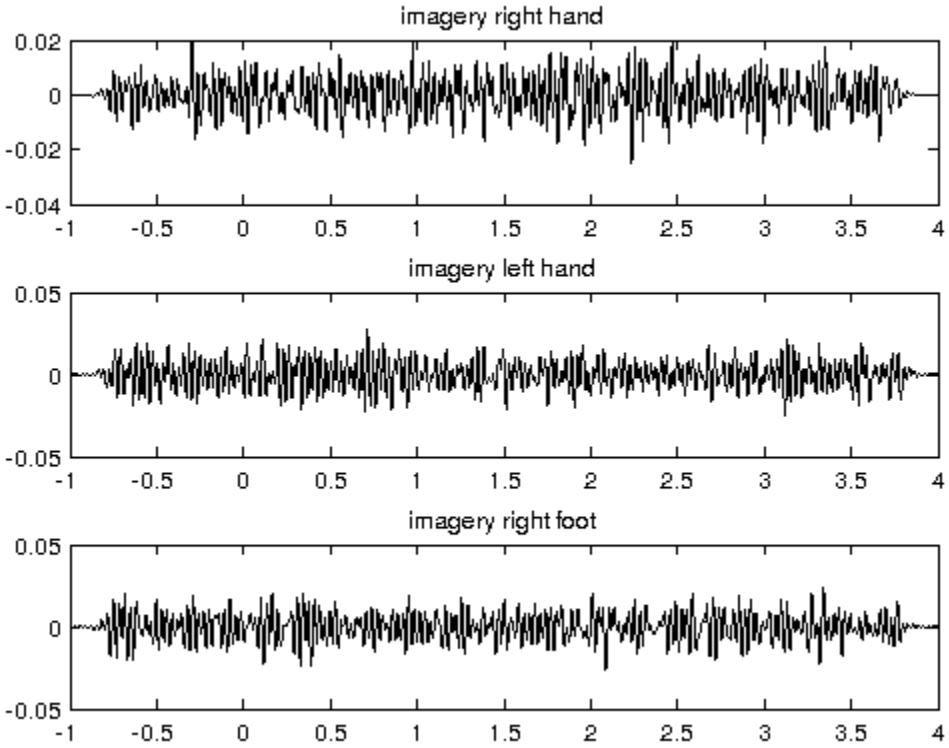
0
-0.01
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4


imagery right hand
imagery left hand
imagery right foot
0.01
0
-0.01
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4


imagery right hand
0.02
0
-0.02
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
imagery left hand
0.04
0.02
0
-0.02
imagery right foot
0.02
0
-0.02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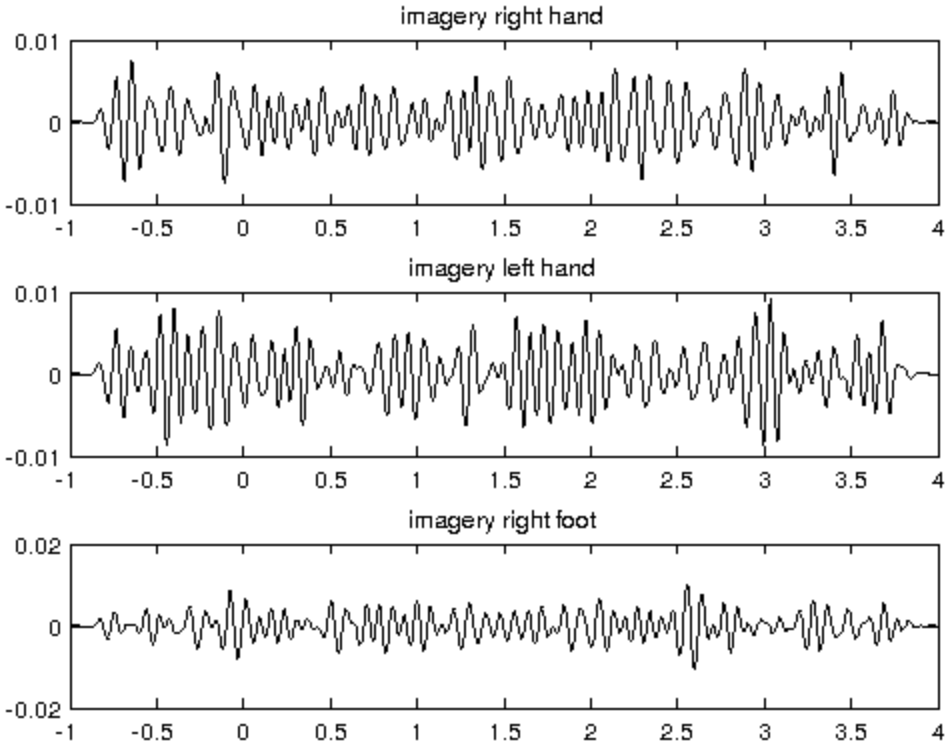
0
-0.02
-0.04
imagery left hand
0.05
0
-0.05
imagery right foot
0.05
0
-0.05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0.01
0
-0.01
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
imagery left hand
0.01
0
-0.01
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
imagery right foot
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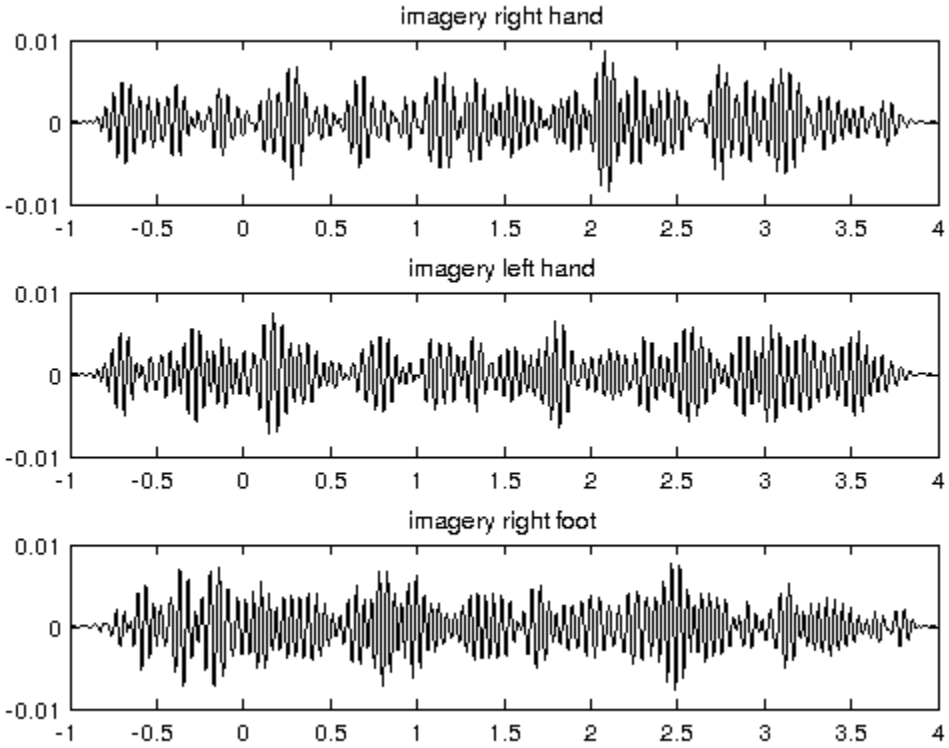
0
-0.02
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4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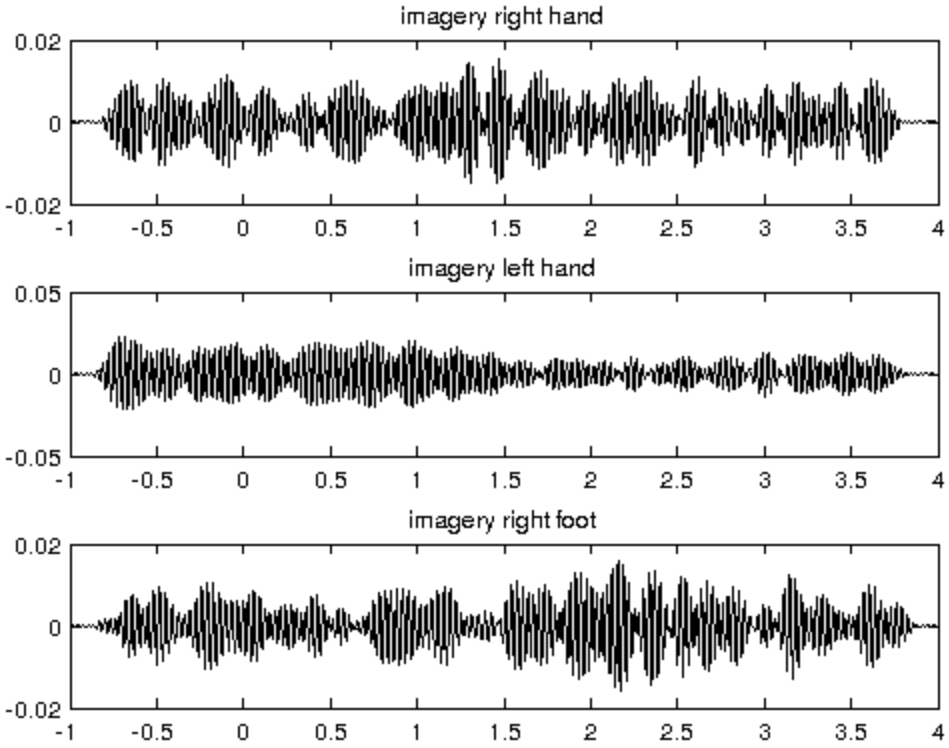
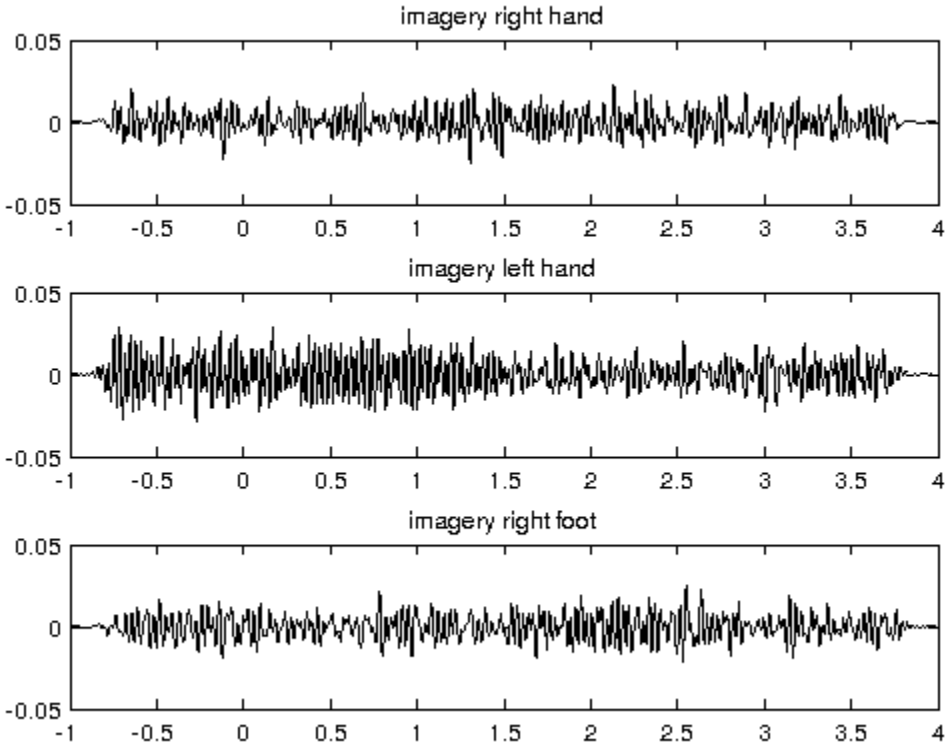
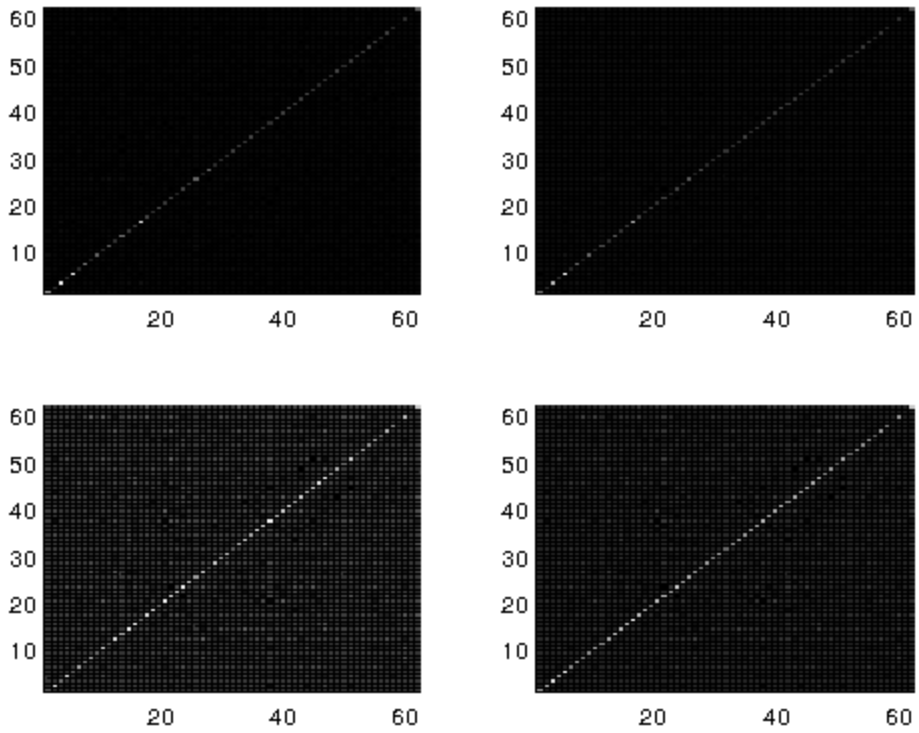
0.01
0
-0.01
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
imagery left hand
0.01
0
-0.01
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
imagery right foot
0.01
0
-0.01
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4

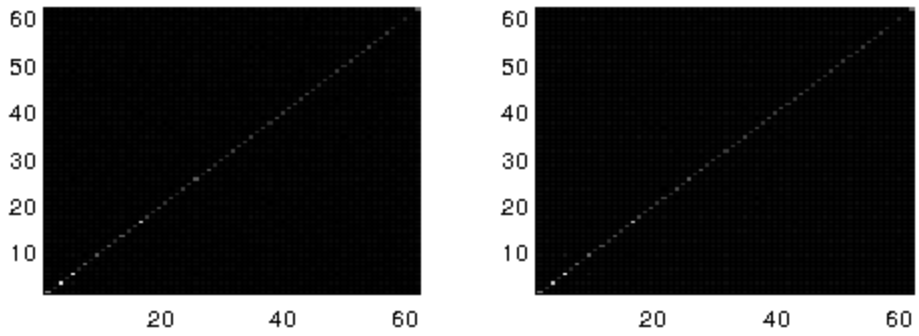

imagery right hand
0.02
0
-0.02
-1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4
imagery left hand
0.05
0
-0.05
-1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4
imagery right foot
0.02
0
-0.02
-1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4


imagery right hand
0.05
0
-0.05
-1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4
imagery left hand
0.05
0
-0.05
-1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4
imagery right foot
0.05
0
-0.05
-1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4

```
close all;
for c = 1:length(class)
    class_logic = Information.class_output == class(c);
    class_logic = class_logic(:);
    temp = Signal(:,:,:,class_logic);
    d = size(temp);
    for b = 1:4
        for i = 1:d(4)
            temp2(:,:,i) = temp(:,:,b,i)'*temp(:,:,b,i);
        end
        covariance(:,:,b,c) = mean(temp2,3);
        clear temp2;
    end
    clear temp;
end

for c = 1:3
    figure(c);
    for i = 1:4
        colormap(gray)
        subplot(2,2,i);
        surf(covariance(:,:,i,c));
        axis([1,62,1,62]);
        view(0,90);
    end
end
```

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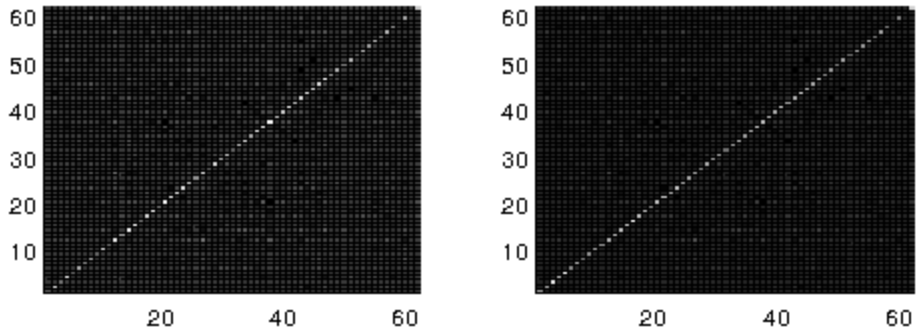
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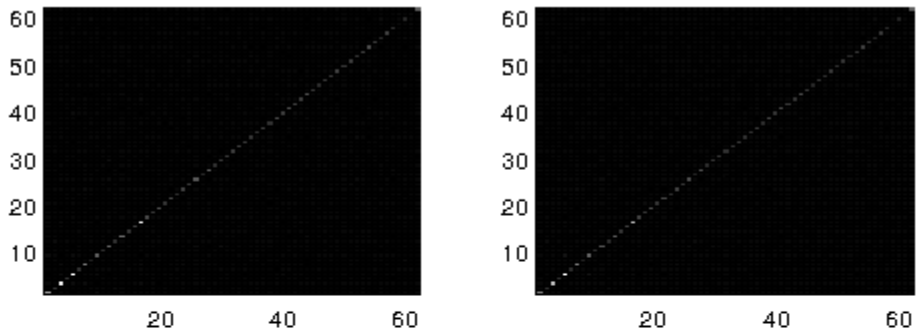
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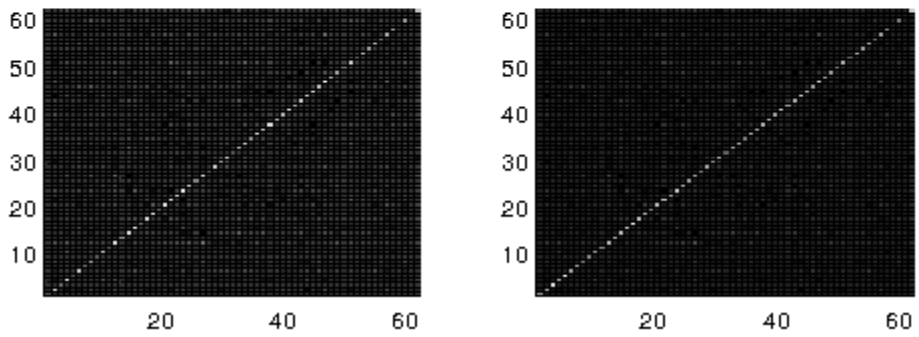
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