```
function [b, v, to, s] = CT1(xtrain, ytrain, xtest, ytest, t, lambdaArr)
b = [];
v = [];
s = [];

for i=1:length(lambdaArr)
    [bt, vt, st] = BVAnalysis(xtrain, ytrain, xtest, ytest, t, lambdaArr(i));
    b = [b bt];
    v = [v vt];
    s = [s st];
end

to = b + v;

end

function [bias2, var, sse] = BVAnalysis(xtrain, ytrain, xtest, ytest, t, lambda)
phi1 = [];
phi2 = [];

xtrain1 = xtrain(1:2:11);
xtrain2 = xtrain(2:2:11);

t1 = t(1:2:11);
t2 = t(2:2:11);

n1 = length(xtrain1);
n2 = length(xtrain2);
n = length(xtrain);

for i=1:n1
    tmp = [];
    for j=0:2
        tmp = [tmp Basis(xtrain1(i), j)];
    end
    phi1 = [phi1; tmp];
end

w1 = ((phi1'*phi1 +lambda*eye(3))^-1)*phi1'*t1';

for i=1:n2
    tmp = [];
    for j=0:2
        tmp = [tmp Basis(xtrain2(i), j)];
    end
    phi2 = [phi2; tmp];
end

w2 = ((phi2'*phi2 +lambda*eye(3))^-1)*phi2'*t2';

yhat1 = [];
yhat2 = [];

for i=1:n
    tmp = [];
    for j=1:3
        tmp = [tmp w1(j)*Basis(xtrain(i), j-1)];
    end
    yhat1 = [yhat1 w1'*tmp'];
end
```

```
for i=1:n
    tmp = [];
    for j=1:3
        tmp = [tmp w2(j)*Basis(xtrain(i), j-1)];
    end
    yhat2 = [yhat2 w2'*tmp'];
end

ybar = [];

for i=1:n
    ybar = [ybar (yhat1(i)+yhat2(i))/2];
end

bias2 = 0;
for i=1:n
    bias2 = bias2 + ybar(i)-ytrain(i);
end

bias2 = bias2 / n;

var = 0;
for i=1:n
    tmp = (yhat1(i) - ybar(i))^2 + (yhat1(i) - ybar(i))^2;
    var = var + tmp / 2;
end

var = var / n;

yhattest1 = [];
yhattest2 = [];

for i=1:n
    tmp = [];
    for j=1:3
        tmp = [tmp w1(j)*Basis(xtest(i), j-1)];
    end
    yhattest1 = [yhattest1 w1'*tmp'];
end

for i=1:n
    tmp = [];
    for j=1:3
        tmp = [tmp w2(j)*Basis(xtest(i), j-1)];
    end
    yhattest2 = [yhattest2 w2'*tmp'];
end

ybartest = [];

for i=1:n
    ybartest = [ybartest (yhattest1(i)+yhattest2(i))/2];
end

e = ybartest - ytest;

sse = e * e';

end

function [res] = Basis(x, i)
res = x ^ i;
end
```

```
bias2 =

   15.8233   15.6071   11.5819    2.3662   -1.7339

var =

    0.0952    0.0672    0.0917    0.4093    0.2517

total =

   15.9185   15.6743   11.6736    2.7755   -1.4822

sse =

   1.0e+03 *

    2.9426    2.8579    1.5353    0.0602    0.0507
```

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