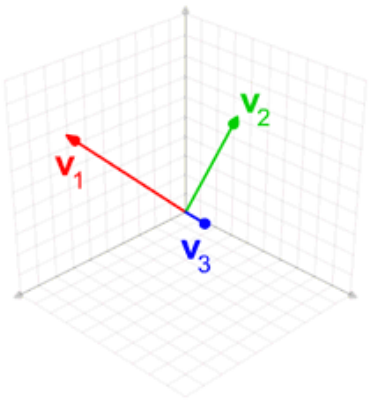

Algorithm

The following MATLAB algorithm implements modified Gram–Schmidt orthonormalization. The vectors v1, ..., vk (columns of matrix V, so that V(:,j) is the jth vector) are replaced by orthonormal vectors (columns of U) which span the same subspace.

```
function U = gramschmidt(V)
    [n, k] = size(V);
    U = zeros(n,k);
    U(:,1) = V(:,1) / norm(V(:,1));
    for i = 2:k
        U(:,i) = V(:,i);
        for j = 1:i-1
            U(:,i) = U(:,i) - (U(:,j)'*U(:,i)) * U(:,j);
        end
        U(:,i) = U(:,i) / norm(U(:,i));
    end
end
```

#EE501 - `Linear Systems Theory` at `METU`