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## Table of Contents

.....	1
Setup .....	1
Applying the filters on input images .....	4
Nuetralizing the Magnitude to display Phase only .....	5
Inverse fft2 .....	5
Calculating plotting limits .....	5

```
% Author: Brandon Bench
% Hybrid Image

clc;
clear;
close all; % closes all figures
```

## Setup

```
image1 = imread('dog.bmp');
image2 = imread('einstein.bmp');
image3 = imread('fish.bmp');

figure; imshow(image1);
title("Dog - Original Image");
figure; imshow(image2);
title("Einstein - Original Image");
figure; imshow(image3);
title("Fish - Original Image");

image1double = double(image1)/255;
image2double = double(image2)/255;
image3double = double(image3)/255;

im1 = rgb2gray(image1double);
im2 = rgb2gray(image2double);
im3 = rgb2gray(image3double);

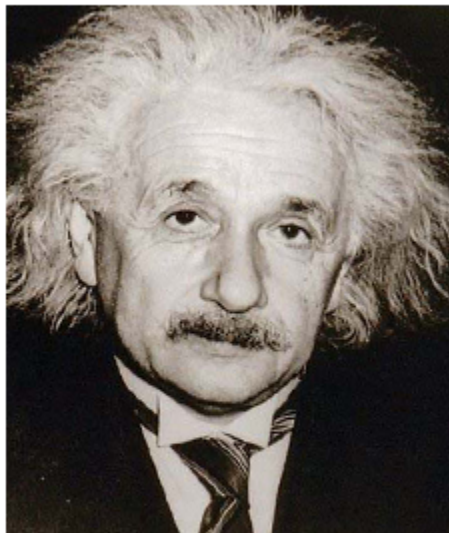
figure; imshow(im1);
title("Dog - Grayscale Image");
figure; imshow(im2);
title("Einstein - Grayscale Image");
figure; imshow(im3);
title("Fish - Grayscale Image");
```

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**Dog - Original Image**



**Einstein - Original Image**



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**Fish - Original Image**

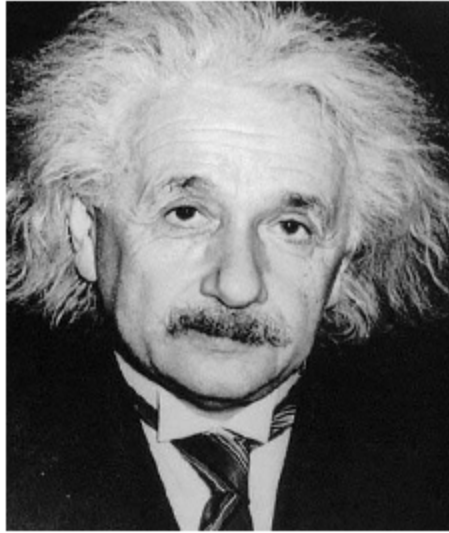


**Dog - Grayscale Image**



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**Einstein - Grayscale Image**



**Fish - Grayscale Image**



## Applying the filters on input images

```
im1_fft = fft2(im1);  
im2_fft = fft2(im2);
```

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```
im3_fft = fft2(im3);
```

## Nuetralizing the Magnitude to display Phase only

```
im1_P = exp(1i*angle(im1_fft));  
im2_P = exp(1i*angle(im2_fft));  
im3_P = exp(1i*angle(im3_fft));
```

## Inverse fft2

```
restoredP1 = ifft2(im1_P);  
restoredP2 = ifft2(im2_P);  
restoredP3 = ifft2(im3_P);
```

## Calculating plotting limits

```
I_Phase_min = min(min(abs(restoredP1)));  
I_Phase_max = max(max(abs(restoredP1)));
```

```
figure('position', [200, 200, 1000, 400]); subplot(1,2,1),  
    imshow(image1), title("Fluffy")  
subplot(1,2,2),  
imshow(abs(restoredP1),[I_Phase_min I_Phase_max ]);  
title("Dog Magnitude Nuetralized")
```

```
figure('position', [200, 200, 1000, 400]); subplot(1,2,1),  
    imshow(image2), title("Mr. Einstein")  
subplot(1,2,2),  
imshow(abs(restoredP2),[I_Phase_min I_Phase_max ]);  
title("Albert Magnitude Nuetralized")
```

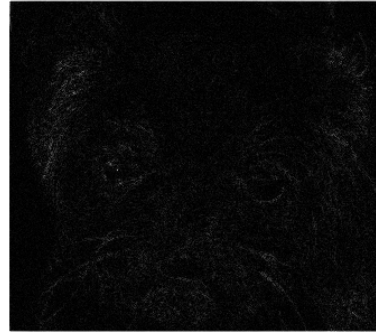
```
figure('position', [200, 200, 1000, 400]); subplot(1,2,1),  
    imshow(image3), title("Pescado")  
subplot(1,2,2),  
imshow(abs(restoredP3),[I_Phase_min I_Phase_max ]);  
title("Fish Magnitude Nuetralized")
```

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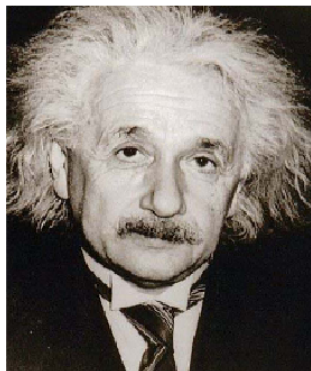
Fluffy



Dog Magnitude Nuetralized



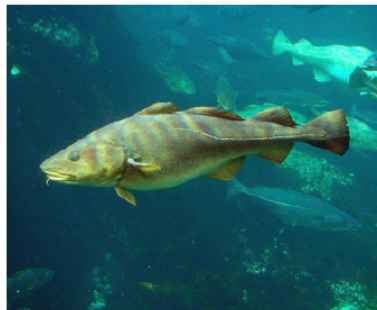
Mr. Einstein



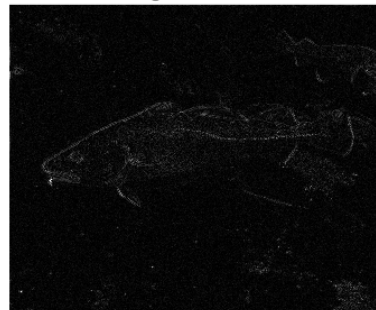
Albert Magnitude Nuetralized



Pescado



Fish Magnitude Nuetralized



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