

# ECE 420 Prelab 7

```
In [1]: import cv2
import numpy as np
import matplotlib.pyplot as plt

def show_bgr(img_bgr, title=None):
    """Display a BGR image using matplotlib (RGB)."""
    plt.figure()
    if title:
        plt.title(title)
    plt.imshow(img_bgr[:, :, ::-1]) # Convert BGR → RGB
    plt.axis("off")
    plt.show()
```

```
In [2]: img = cv2.imread("logo.png")
if img is None:
    raise FileNotFoundError("logo.png not found in working directory.")
show_bgr(img, "Original Image")
```

Original Image

The image shows the text "ECE 420" in a large, bold, orange font. The letters are slightly blurred, giving it a soft appearance. The background is white.

```
In [3]: annotated = img.copy()
h, w = annotated.shape[:2]
```

```

side = 20
half = side // 2
center_x, center_y = w // 2, h // 2

top_left = (center_x - half, center_y - half)
bottom_right = (center_x + half, center_y + half)
blue_bgr = (255, 0, 0) # BGR format

cv2.rectangle(annotated, top_left, bottom_right, blue_bgr, thickness=-1)
show_bgr(annotated, "Image with Blue Center Square")

```

Image with Blue Center Square



```

In [4]: text = "Prelab7"
font = cv2.FONT_HERSHEY_SIMPLEX
font_scale = 1.0
thickness = 2
red_bgr = (0, 0, 255)

(text_w, text_h), baseline = cv2.getTextSize(text, font, font_scale, thickness)
x = (w - text_w) // 2
top_margin = max(10, text_h + 10)
y = top_margin + text_h

cv2.putText(
    annotated, text, (x, y),
    font, font_scale, red_bgr, thickness, lineType=cv2.LINE_AA

```

```
)  
show_bgr(annotated, "Final Annotated Image")
```

Final Annotated Image

The image displays the text "ECE 420" in a large, bold, orange font. Overlaid on this text is a small blue square, and above the square, the words "Prelab7" are written in a red, sans-serif font.

In [ ]: