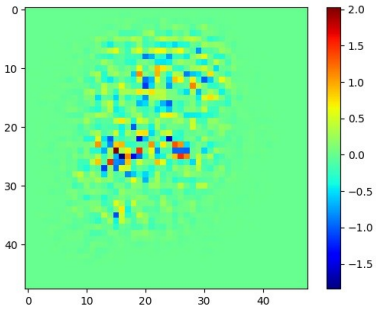
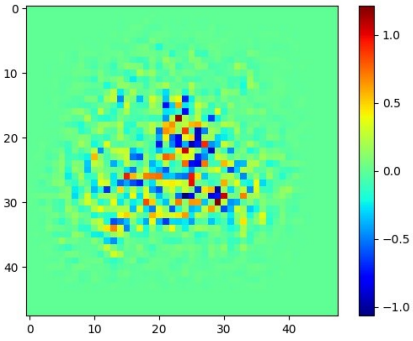
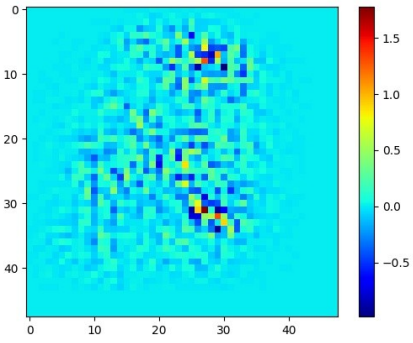
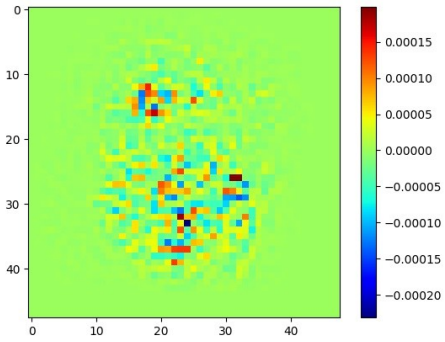
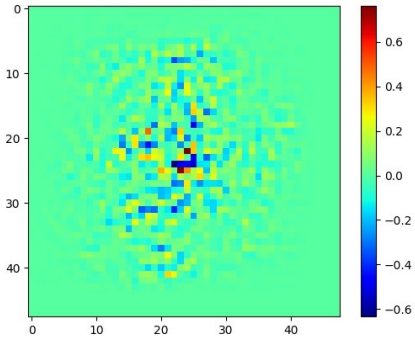
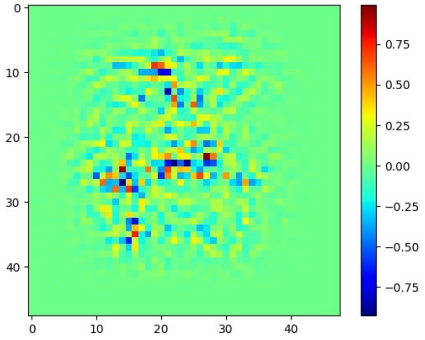
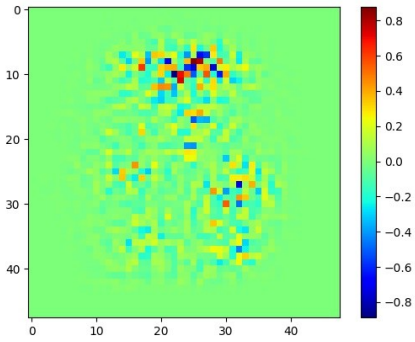
學號：B06902052 系級： 資工二 姓名：張集貴

1. (2%) 從作業三可以發現，使用 CNN 的確有些好處，試繪出其 saliency maps，觀察模型在做 classification 時，是 focus 在圖片的哪些部份?
(Collaborators:)

答：主要是五官，特別是眼睛。

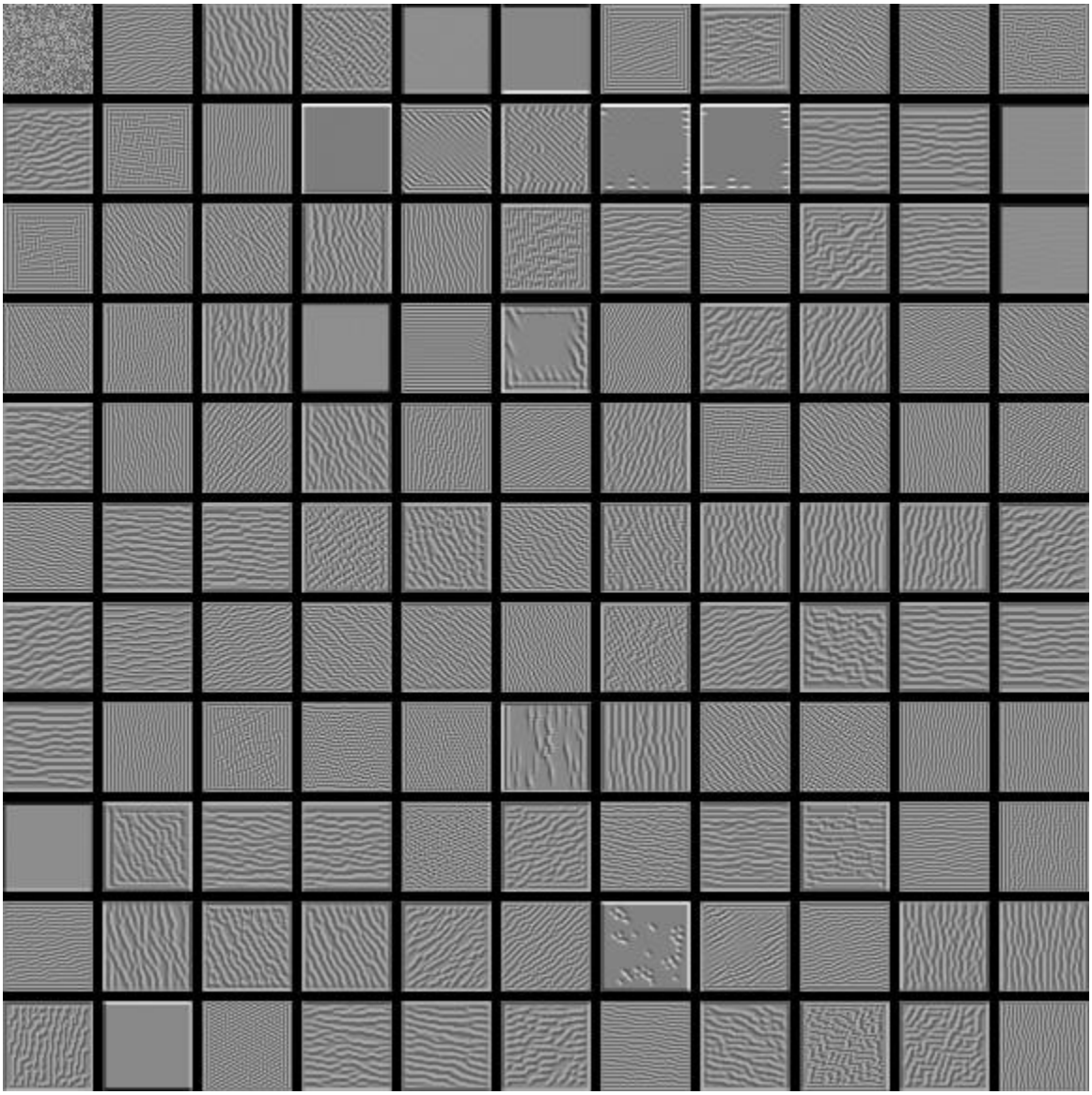
label 0		
label 1		
label 2		

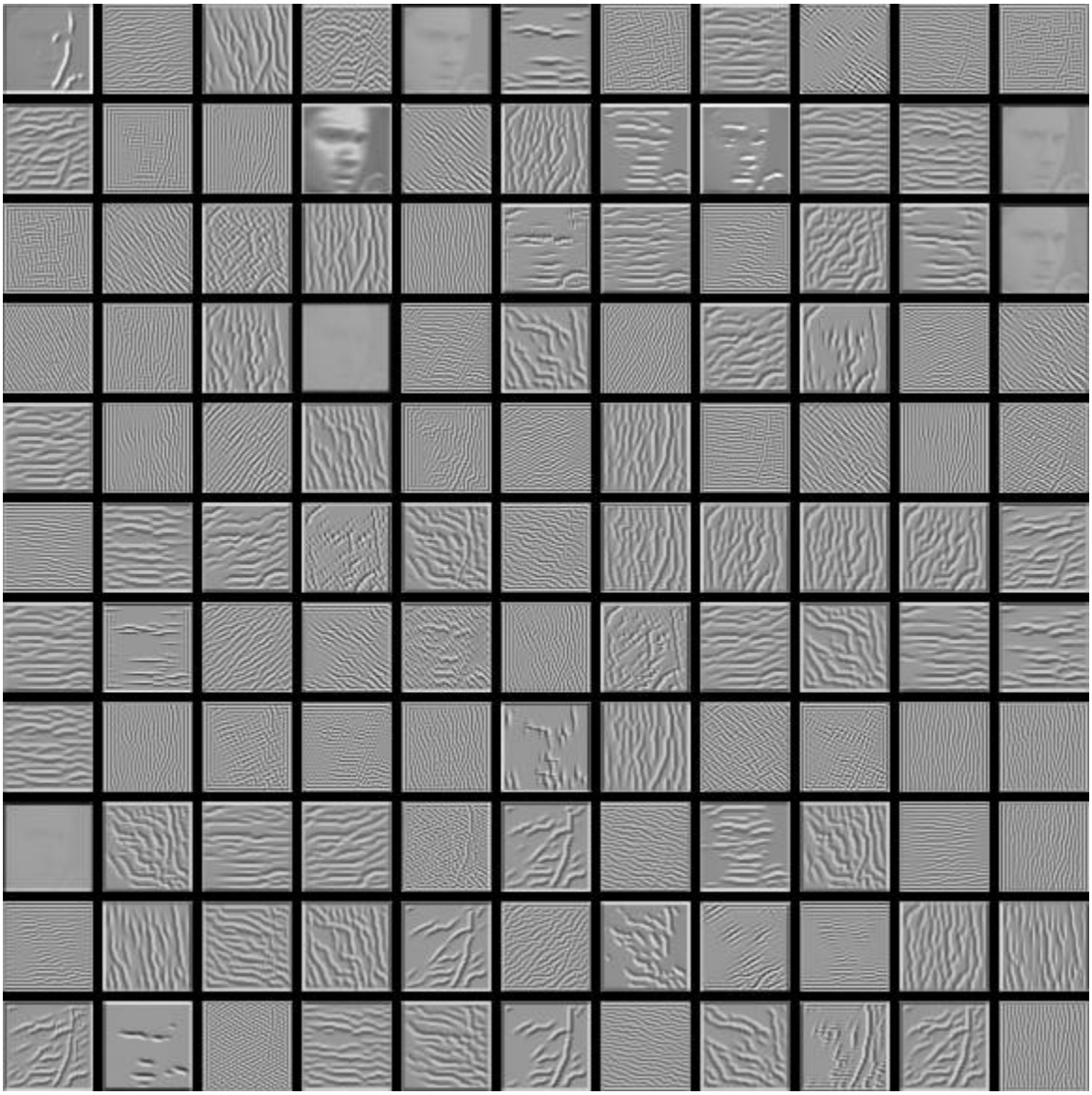
label 3		
label 4		
label 5		

label 6		

2. (3%) 承(1) 利用上課所提到的 gradient ascent 方法，觀察特定層的 filter 最容易被哪種圖片 activate 與觀察 filter 的 output。(Collaborators:)

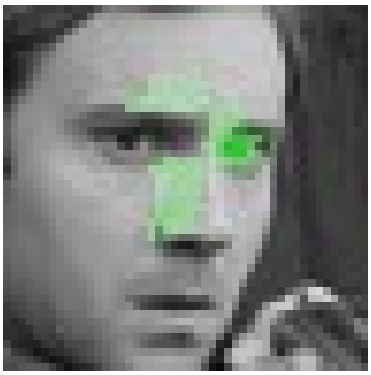
   答：filter 的功能應該是找出五官的輪廓，最容易被含有線條的圖片 activate。





3. (3%) 請使用 Lime 套件分析你的模型對於各種表情的判斷方式，並解釋為何你的模型在某些 label 表現得特別好 (可以搭配作業三的 Confusion Matrix)。

答：我的模型在 label 5 表現得比較好，從 lime 的分析可以看出模型主要是透過眼睛來判斷這種表情。

label 0	
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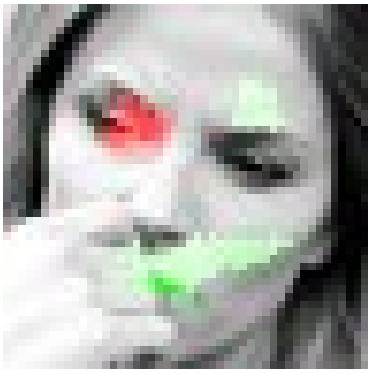
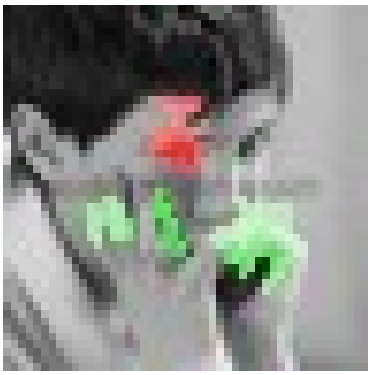
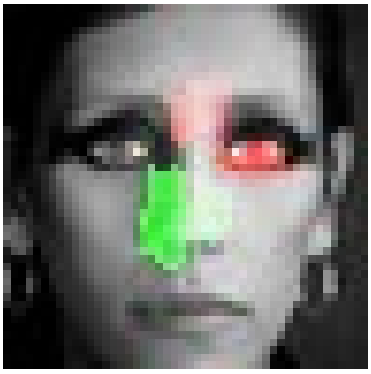
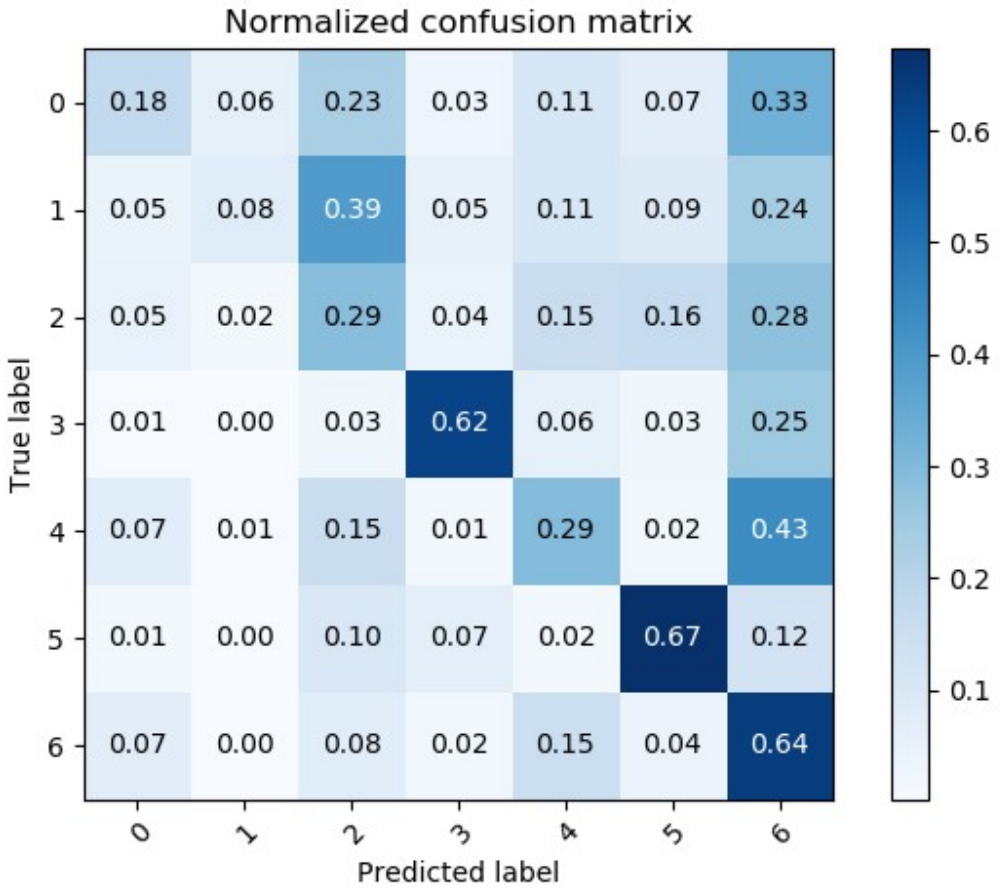
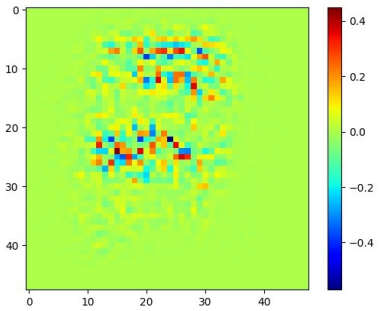
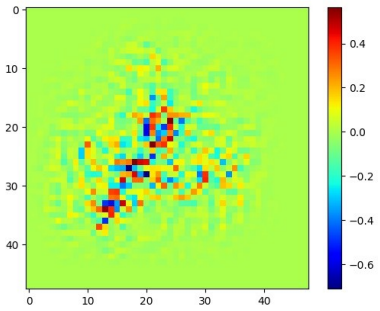
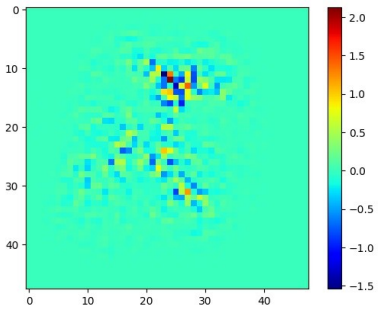
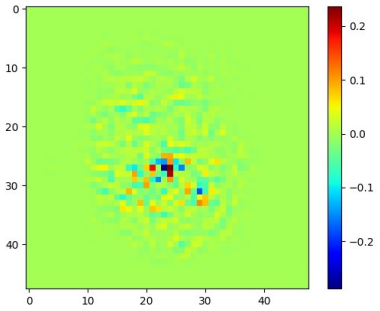
label 2	
label 3	

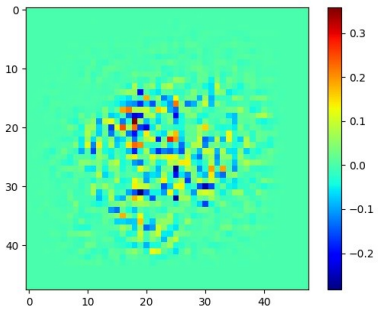
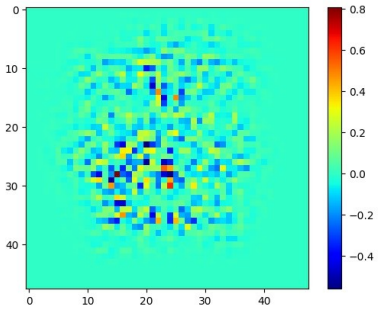
label 4	
label 5	
label 6	



4. (2%) [自由發揮] 請同學自行搜尋或參考上課曾提及的內容，實作任一種方式來觀察 CNN 模型的訓練，並說明你的實作方法及呈現 visualization 的結果。

答：我實做了課堂上提及的 Integrated gradient。對於不同的 0 <= alpha <= 1，將 alpha * image 代入 1. 中實做的 saliency maps 的函式，累加起來取平均再乘以 image 即得到 integrated gradients。

label 0		
label 1		
label 2		
label 3		

label 4		
label 5		
label 6