Python Solution with Explanation, Faster than 99%

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```python
class Solution(object):
    def computeArea(self, A, B, C, D, E, F, G, H):

        # Find the dimensions of the given rectangles
        w1 = abs(C-A)
        h1 = abs(D-B)
        w2 = abs(G-E)
        h2 = abs(H-F)

        # Compute the sum of the areas of both rectangles
        area = w1*h1 + w2*h2

        if (G<A) or (E>C) or (F>D) or (H<B): # Conditions for no overlap (if G is left of A, etc.)
            return area
        else:
            I = max(A,E) # Leftmost x position will be the rightmost of the two left x positions
            J = max(B,F) # Lower y position will be the higher of the two lower y positions
            K = min(C,G) # Rightmost y position will be the leftmost of the two right x positions
            L = min(D,H) # Higher y position will be the lower of the two higher y positions

            # Find dimensions of overlapping section
            w3 = abs(K-I)
            h3 = abs(L-J)

            # Return the summed area minus the area of the overlapping section
            return area - (w3*h3)
```