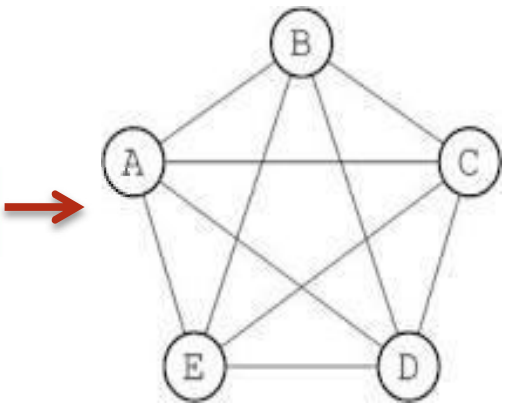
MOTIVATION

- Attention is one of the most important component of primate vision. It is the mechanism to rapidly focus gaze to some selected portions of the visual input.
- Visual saliency is closely related to attention.
- Now-a-days almost every device has the ability to capture images on the go. But some times, the portion user want to draw attention in the image may fail to do so, instead some other thing may draw user attention.
- In this project, a step has been taken to address this problem.
- Visual saliency of required part has been tried to improve .

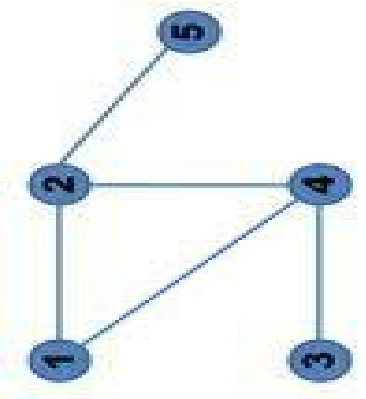
WHAT IS VISUAL SALIENCY

- Saliency of an item - be it an object, a person, a pixel, etc. is the state or quality by which it stands out relative to its neighbours.
- Visual Saliency is the distinct subjective quality which makes some item stand different from other objects in its vicinity.
- Our attention is mostly attracted towards most salient object in the field of view.
- Visual salience is mostly driven by two models:
  - ***Bottom-up, stimulus-driven***
  - ***Top-down, memory or conscious driven***



Graph

Based on threshold



Binaried Graph

Calculating the degree

	3	1	3	1	2
	A	B	C	D	E
A	0	1	1	0	1
B	1	0	0	0	0
C	1	0	0	1	1
D	0	0	1	0	0
E	1	0	1	0	0

- Edge-weight is proportional to the diff. between the features of the nodes.
- Feature Dist. is the abs. difference of the mean feature values of these nodes and normalized with respect to the max. value of feature distance.

$$D_{f_{ij}} = |\mu_{f_i} - \mu_{f_j}| / \max_{\forall k,\forall l}(|\mu_{f_k} - \mu_{f_l}|)$$

- Edge-weight is inversely proportional to spatial distance between
- A Gaussian function is used to simulate the decay of feature influence with spatial distance

- Spatial distance is the cartesian distance between the mid-points of the two blocks and normalized with respect to max. possible value.
- So, final edge weight function is

$$F(V_i, V_j) = D_{f_{ij}} e^{-D_{c_{ij}}^2 / 2\sigma^2}$$

- Since edge weights are proportional to feature dissimilarities, so edges with higher weight are taken.
- Degree of a node, which is a centrality measure is the number of nodes to which it is connected.
- It is estimated by row/column-wise summation of the adjacency matrix.

$$\mathrm{DC}_i = \sum_j A_{i,j}$$

- Hence the saliency map based on intensity is formed.

CHANGING THE SALIENCY OF THE IMAGE

- From the degree centrality matrix, node with the max degree and hence the most salient node is found.
- Its feature value i.e mean of all intensities of pixels in the particular block is noted.
- User is given the choice to selected a point in the region he wants to be salient.
- User selected point is then used to find the node in which the point lies.