**The Data Science Seminar**
**The Majestic Roadrunners**
**Checkpoint 4**

# Graph Analytics

Q1: To identify relationships between officers, co-accused in the firearm cases.

For this question, we visualized the relationship existing between officers involved in cases specific to firearms using the *trr_trr table*. We modeled a pairwise relationship between 2 officers as nodes in the graph to extract the direction as well as the strength of the relationship they shared on the basis of the allegations which were common to both

*Challenges Faced:*
The challenge we faced while analyzing officers involved in the same *trr_id*, we could not extract any possible analysis since there were no common event id.
Initially we tried a number of use-cases including officers involved in the same event or same datetime. But the TRR table did not have appropriate columns that linked them and event_id was specific to particular officers rather than being generic to a particular trr case. So, we used trr_trrstatus to find officers id and linked them to get a meaning graph analytics.

*Analysis*:
After running the different algorithms, we found that only 4 to 5 officers have a high *page rank*, and *triangle count* makes it evident that only few officers in the department are highly connected and involved in the firearm cases.

Q2. To find a relationship between officers who were involved in the same forcetype or action category.

For this question, we combined the results of the table *trr_actionresponse* and *trr_trr.* We modeled a pairwise relationship between 2 officers as nodes in the graph to extract the direction as well as the strength of the relationship they shared on the basis of the allegations which were common to both

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