# Classification of AGNs and Pulsars using Machine Learning techniques

Aakash Bhat

FAU Erlangen-Nurnberg

Juli 2019

# Table of contents

# Outline

- Create machine learning algorithms capable of classifying AGNs and Pulsars
- Use 4-year Fermi LAT catalog to train and test the algorithms
- Apply the algorithms on the newly released 8-year list

# Outline

# Types of sources and algorithms

- Use the classified AGNs (BL lacs etc) and Pulsars
- Find the appropriate "features" to use
- Algorithms include: Random forests, Logistic regression, Neural Networks
- Estimate performance by focusing on individual models (Number and depth of trees in forest based models, Number of layers in Neural networks)

# Outline

- Total of 1905 sources classified
- Features: Flux, uncertainty, Significant curvature, spectral index, Hardness ratios, Galactic latitude
- 70% training and 30% testing
- $hr_{ij} = \frac{EnergyFlux_j - EnergyFlux_i}{EnergyFlux_j + EnergyFlux_i}$

# Summary

- The first main message of your talk in one or two lines.
- The second main message of your talk in one or two lines.
- Perhaps a third message, but not more than that.