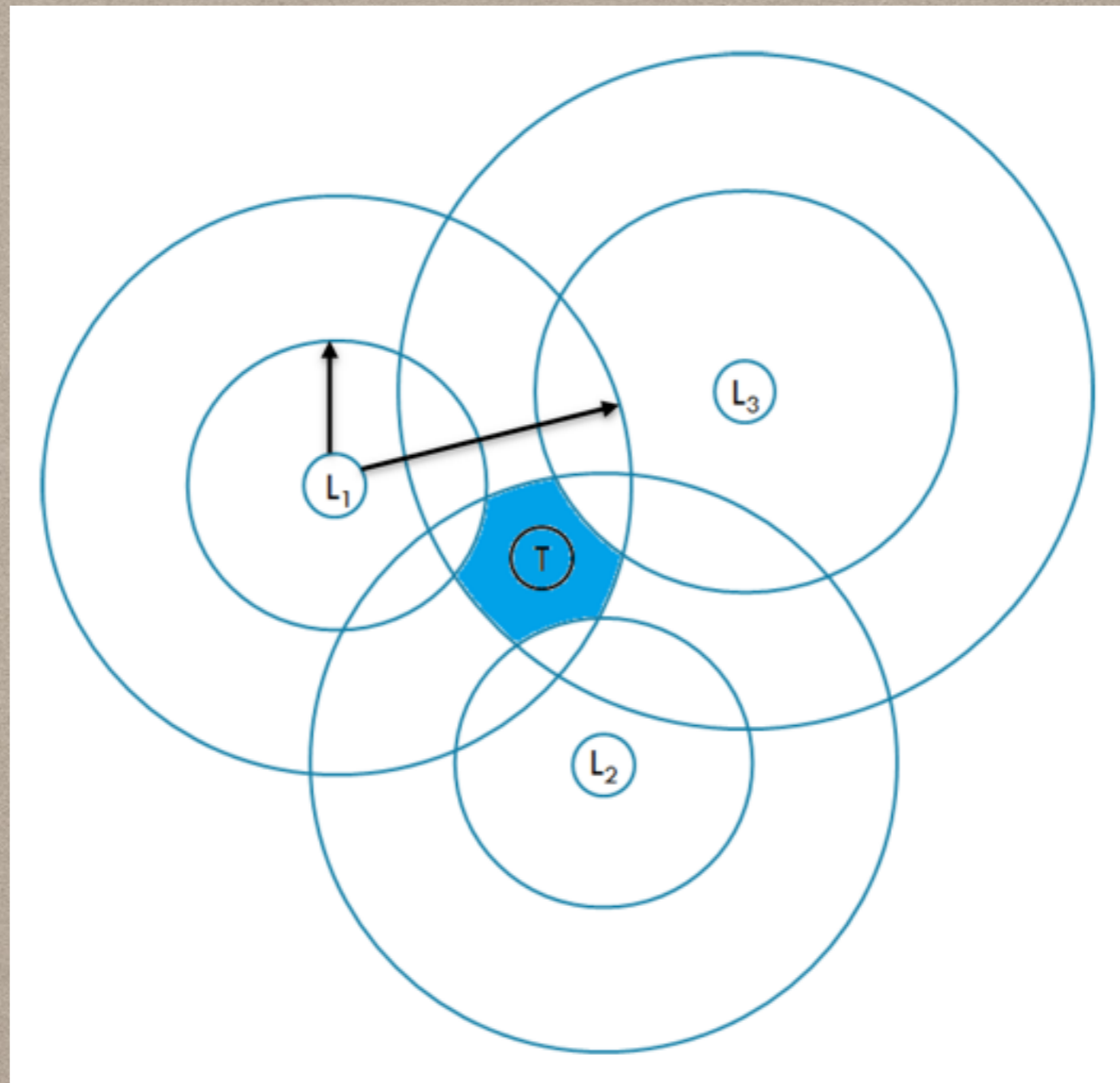


# **ADAPTIVE GEOLOCATION OF INTERNET HOSTS**

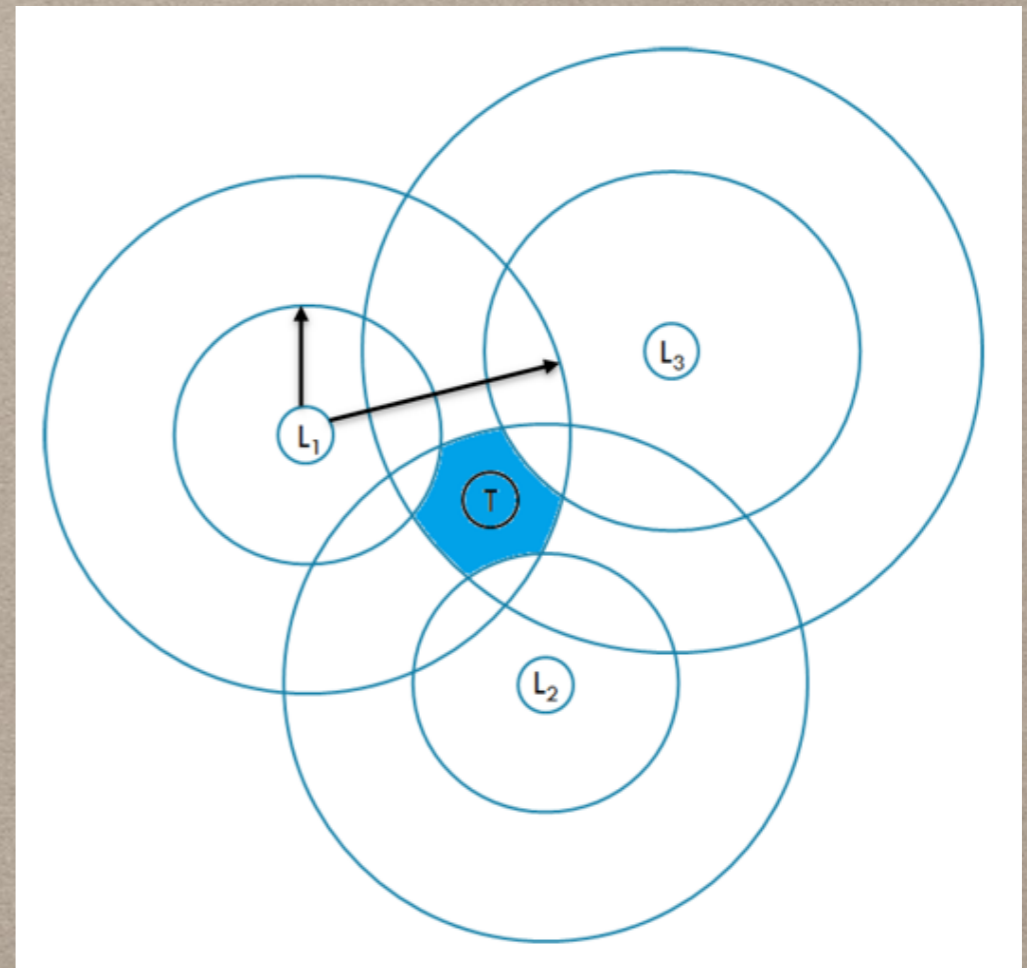
**RAJA A. A. KHAN, ANJUM NAVEED, ROGER L.  
COTTRELL**



# BASICS OF MULTILETRATION

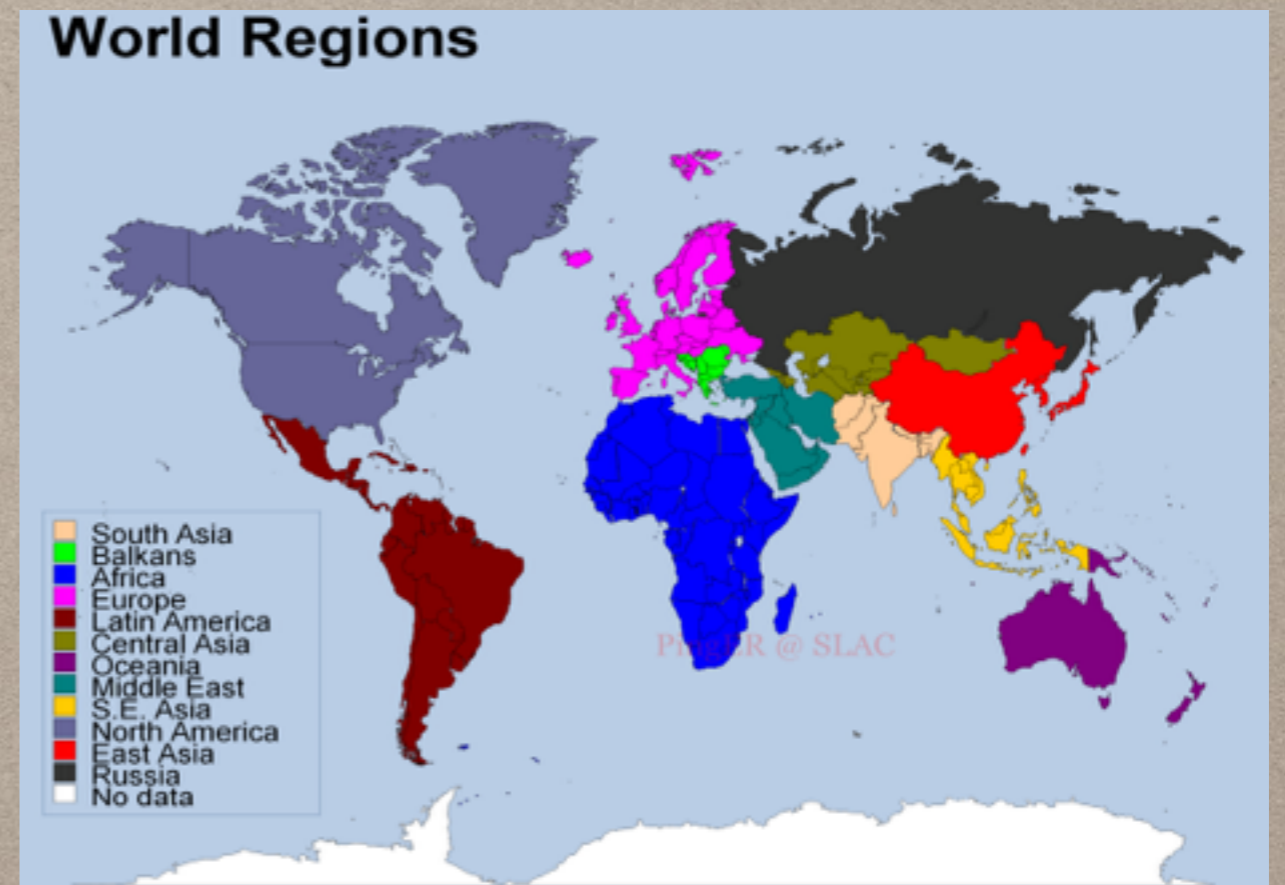
# ISSUES WITH EXISTING APPROACHES

- Inaccurate - high margin of error with location predicted 100s of miles off target
- Fewer and distant landmarks
- Fixed RTT to distance (Alpha) ratio



# AIG APPROACH

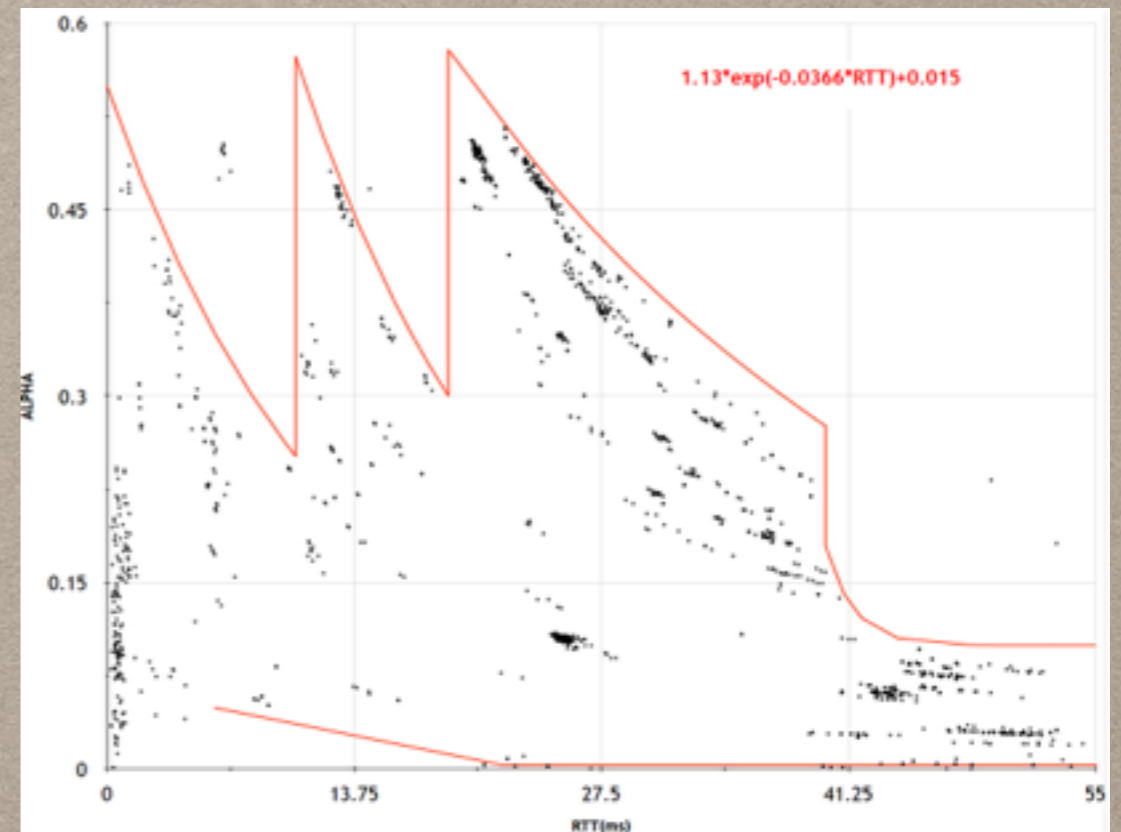
- Divide world into regions
  - Every region has different network profile and hence different RTT to distance mapping
- Use PingER and PlanetLab Nodes
  - More than 300 nodes monitoring more than 1000 nodes provide extensive information about behaviour of RTT, its dependence on different factors and its mapping on distance.
- This also addresses the problem of fewer landmarks



# AIG APPROACH

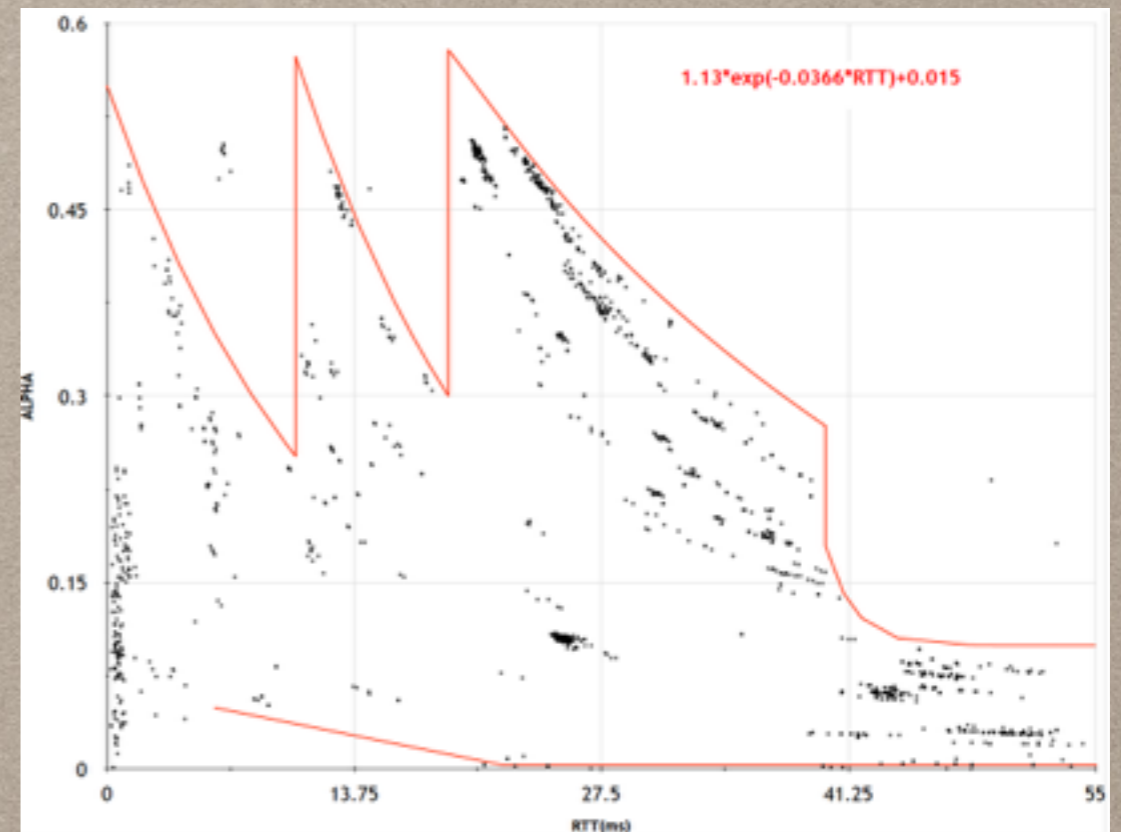
- Within Each region, use adaptive alpha
- We have observed PingER data (collected over multiple years) and derived the expression for RTT to distance mapping ratio
- For Pakistan:

$$1.13 * \exp(-0.0366 * RTT) + 0.015$$

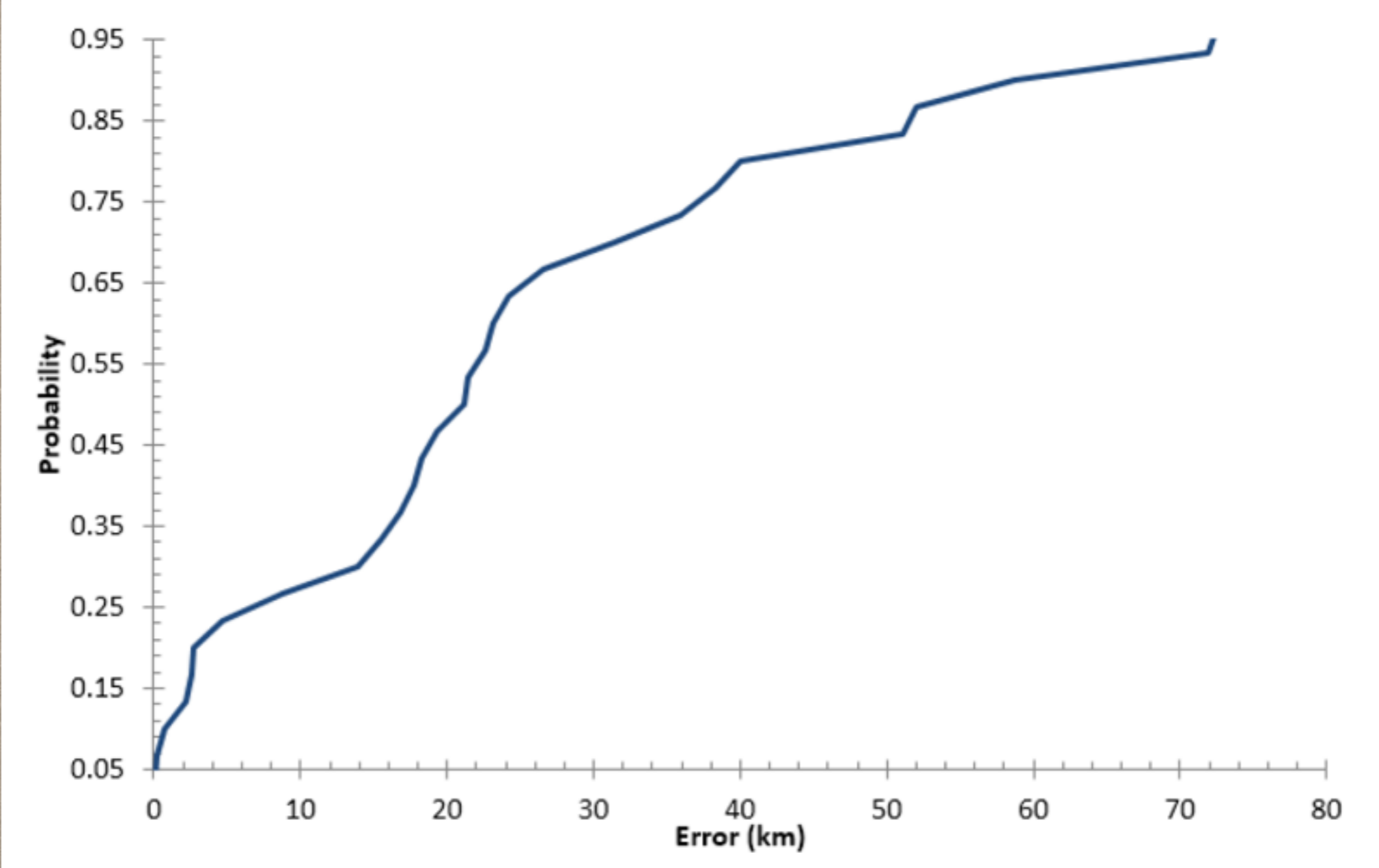


# AIG APPROACH

- Minimum and Maximum RTT are used to restrict area of interest
- Regions like sea and forests are excluded from target region
- Two tier approach is used where first tier detects region of target while second tier performs geolocation using regional landmarks



# RESULTS



**QUESTIONS AND COMMENTS!!!**