

## Nanjee IP Geolocation System Accuracy vs. Competitor Solutions in United States Case Study

### 1. Internal testing of US IPs data set with known locations

#### 1.1. Test set

- 2,000 US IPs whose actual location is known\*
- Test sample is representative: 51 states/ 1,140 cities/ 556 Internet service providers

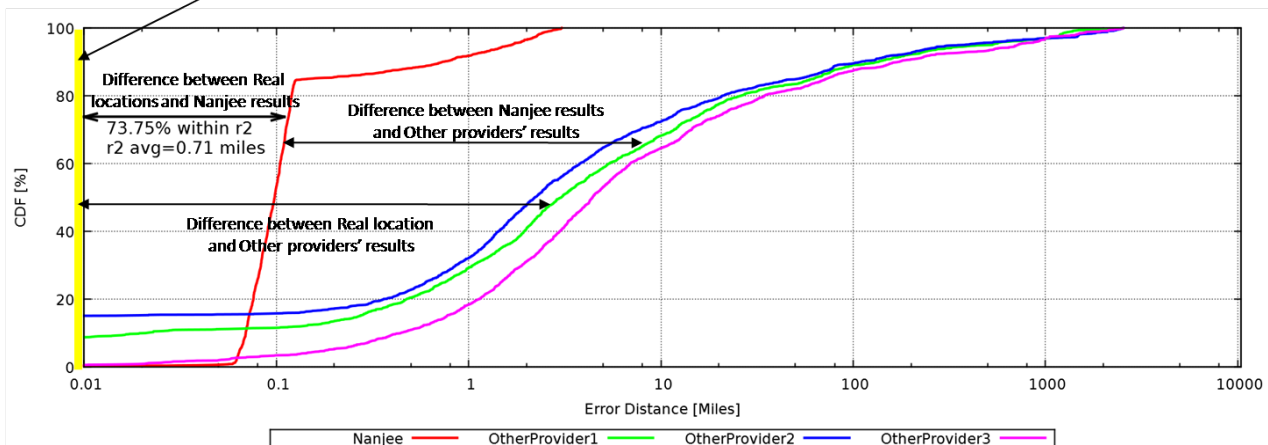
\*Nanjee obtained IP location data through collaboration with internet community associations and business networks; test set contains representative mix of residential and business IPs across the US

#### 1.2. Test results

For each results set the data was collated into an accuracy table for each IP address (closest match first) which included Other Providers' accuracy in miles from the real IP Location - results at given points in the accuracy table (% below) were as follows:

Providers' Accuracy to real IP Location & Compared with Nanjee	50%	75%	90%	95%	Average	
Real Location/Nanjee	0	0.04	1.49	14.81	2.55	Miles
Real Location/Other Provider 1	2.97	16.62	136.48	644.83	79.47	Miles
Real Location/Other Provider 2	4.40	21.44	174.16	717.75	100.28	Miles
Real Location/Other Provider 3	2.20	12.15	109.82	349.81	85.77	Miles
Nanjee/Other Provider 1	3.25	17.51	137.06	722.45	80.70	Miles
Nanjee/Other Provider 2	4.78	25.03	240.37	890.76	101.32	Miles
Nanjee/Other Provider 3	2.53	15.78	148.21	501.01	88.67	Miles

**Real locations of IPs**



#### 1.3. Conclusions

- Difference between Nanjee and Other Providers' results are significant (from 81 to 101 miles on average)
- Nanjee results are around 40 times better (more accurate) than Other Providers' results
- Results for the Real Location test show Nanjee accuracy at 'street level' (75% accuracy within 0.7 miles on average) and Other Providers' accuracy beyond "city boundary" (75% accuracy between 12 & 22 miles).

- Nanjee accuracy remains very strong (90% accuracy within 1.49 miles) whilst Other Providers become very distant (90% accuracy between 137 & 240 miles).

## 2. External client testing of US IPs data set with unknown locations

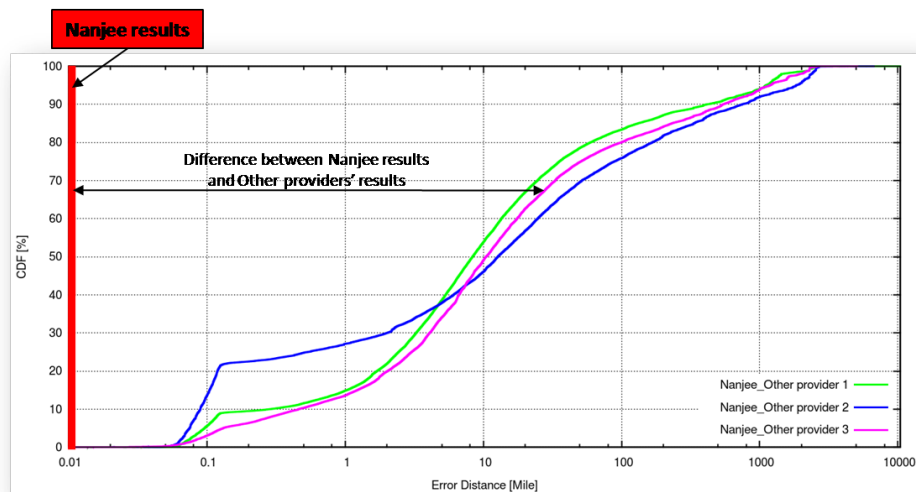
### 2.1. Test set

- 780,760 US IPs whose actual location is **unknown**
- Test sample is representative as it covers 6,398 US Internet service providers and IPs are obtained from client application users (live IPs)

### 2.2. Test results

For each results set the data was collated into a table with Nanjee accuracy compared to Other Provider's results (closest first) with the distance in miles – the percentage in the below table details difference at that point in the table e.g. 50% = IP 390,380:

Providers' Difference to Nanjee	50%	75%	90%	95%	Average	
Naneej/Other provider 1	8.36	35.49	415.32	1,458.83	144.73	Miles
Naneej/Other provider 2	12.72	88.58	748.30	1,745.76	228.63	Miles
Naneej/Other provider 3	10.46	50.74	543.89	1,510.21	170.91	Miles



### 2.3. Conclusions

- Difference between Nanjee results and Other Providers' results are significant (145-229 miles on average)
- Other providers' results show high similarity in both tests.
- Difference between Nanjee results and Other Providers' results are significant and show a large difference similarity in both tests providing an assumption that Nanjee results are highly accurate and reliable

Result profile from the 1st test (IPs with known locations) are similar to the 2nd test (IPs with unknown locations):

**Naneej results can be trusted on below-city-level and are around 40-50 times better (more accurate) than other solution provider results**