CS-335 Project
Sprint Semester 2019

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Agenda

Description

Objective

Workflow

Offline Mode

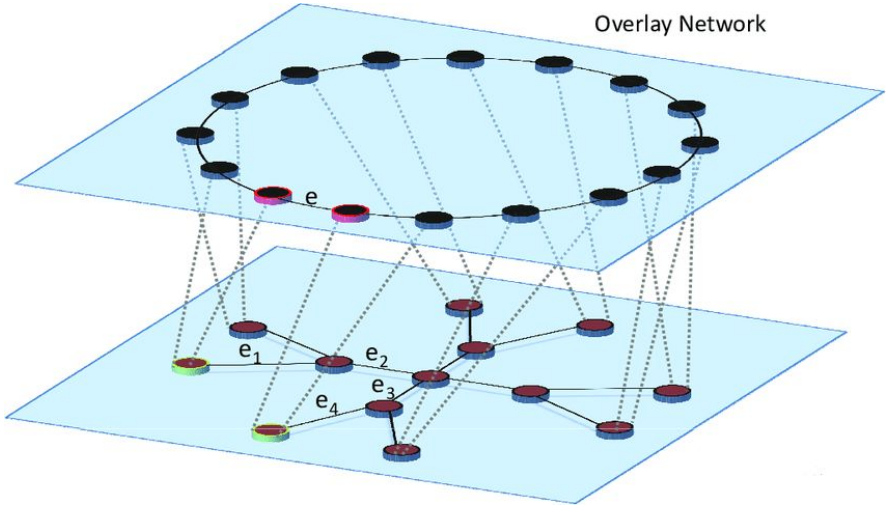
Automation

Analysis

Results

Description

- Overlay Network
- Client - Server Model
- Ping - Traceroute tools
- Socket Programming
- Encrypted Communication

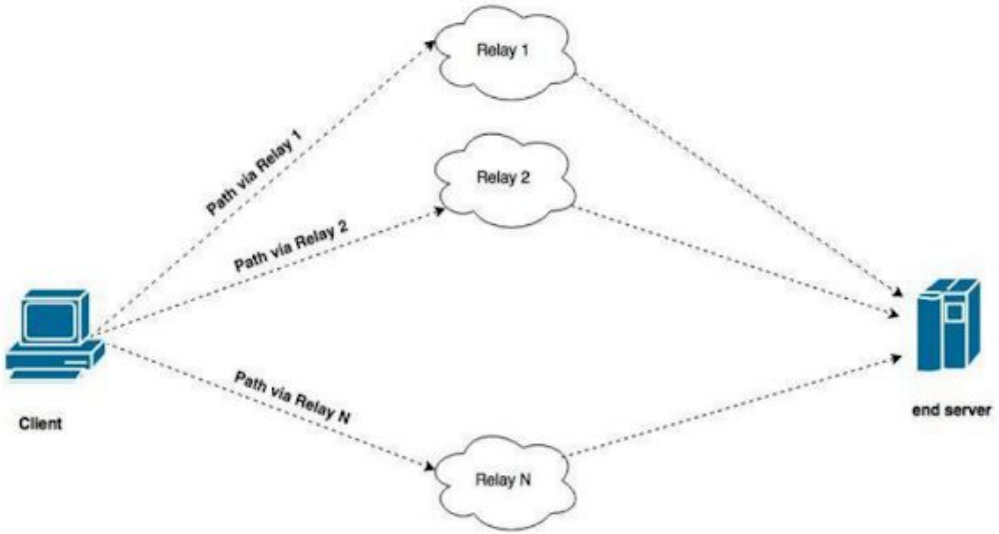


network that is built on top of another network

Objective

Implement an innovative prototype Service that provides:

- ***Security***, by hidding client's IP address from server using relay nodes
- ***Speed***, by choosing the best path based on criteria such as latency or number of hops



Workflow

1. End Server, Number of Pings, Criteria (User Input)
2. Ping & Traceroute
    a. **Direct**
    b. **Via Relays**
3. Compare measurements based on Criteria
4. Choose best path (Download image)

- Encrypted Communication (RSA - AES)
- Client - Relay Communication via Socket

Core Entities

- Relay Nodes List
- End Servers List

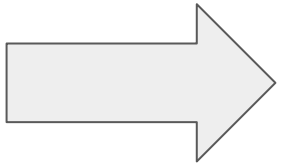
Criteria :

1. **Latency**
2. **Number of hops**

Question?

Best Path Selection based on real time **Measurements** which are expensive in both:

- Time
- Money



Introduces Limitations

Answer!

Offline Mode

- Chooses Best Path based on log history
- Uses Machine Learning techniques

Offline Mode

Chooses best path based on previous best path selection

- *Image* and *Criteria* (User Input)
- *Best Path* selection using

- **Logfile**
  1. Time
  2. End Host
  3. File Size
  4. Criteria

Machine Learning Models:

- Logistic Regression (72%)
- Random Forest (73%)
- SVM (76%)

} Accuracy

Automation

- More Data ⟹ Better Performance
- Time consuming to execute measurements manually

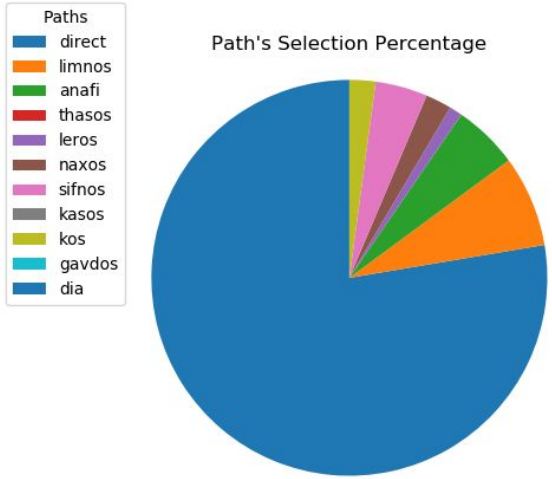
Automated Procedure of **enriching** our current dataset

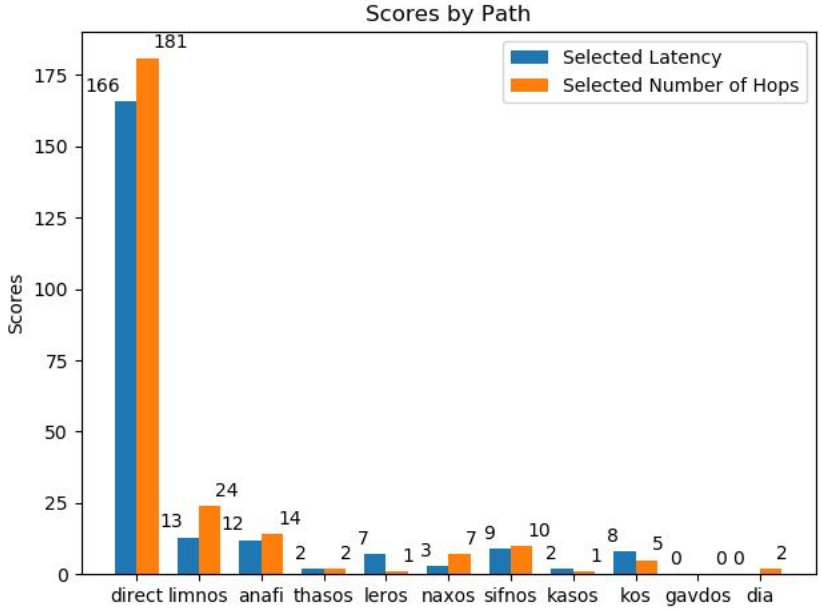
- Adapt to possible changes
- Keep continuous learning approach

Imitate user's input by randomly choosing:

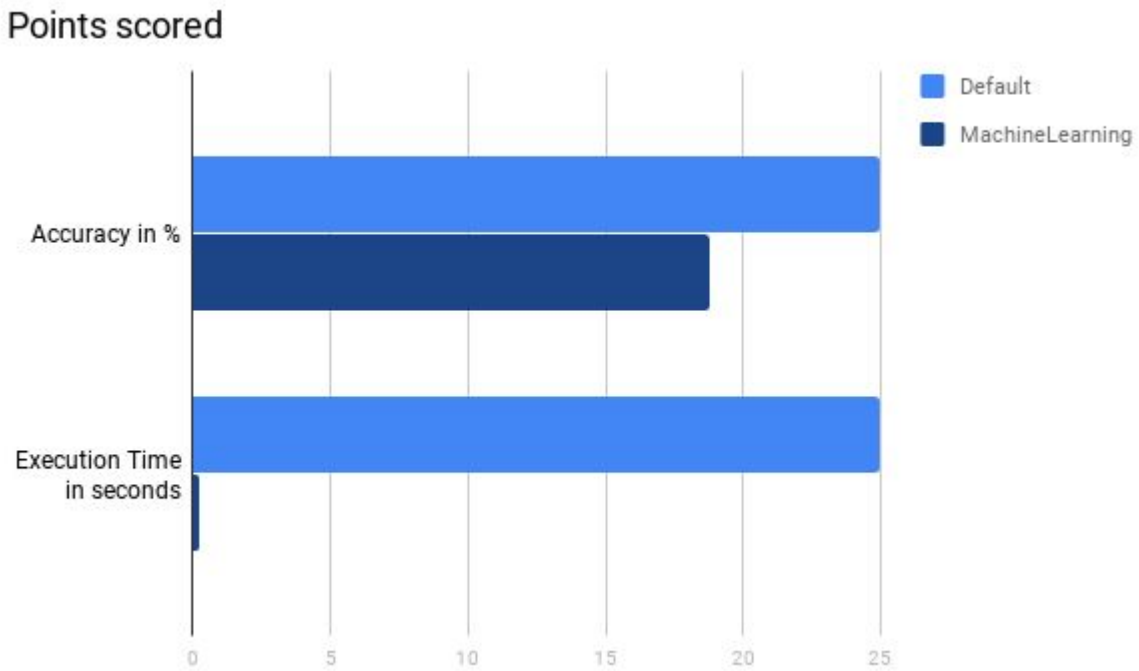
- Criteria
- End Server
- Number of Pings

Analysis


Paths
direct
limnos
anafi
thasos
leros
naxos
sifnos
kasos
kos
gavdos
dia
Path's Selection Percentage


Scores by Path
Selected Latency
Selected Number of Hops
Scores
0
25
50
75
100
125
150
175
166
181
13
24
12
14
2
2
7
1
3
7
9
10
2
1
8
5
0
0 0
2
direct
limnos
anafi
thasos
leros
naxos
sifnos
kasos
kos
gavdos
dia

Results


Points scored
Default
MachineLearning
Accuracy in %
Execution Time in seconds
0
5
10
15
20
25

THANK YOU FOR YOUR ATTENTION

ANY QUESTIONS ...