Internet backbones in space

* Custom simulator that simulates satellite orbits, and the resulting connectivity and latency
* The constellation considered in our simulation is SpaceX Starlink

Pros:

* Take dynamic connectivity and rain fade into account.
* Can fed into lots of historically real data.(e.g., 1833 cities dataset, simulate rainfall data)
* Flexibility as deploy different routing methods(Customization)
* Evaluate their routing approach as a model.
* Behave as a statistical model.

Cons:

* Limited Scale, model the orbits of a 10% deployment of the space X
* In a very high abstraction due to the limited scale.
* Outdated data, cannot predict what actually happens in the real-world.
* Limited Network Aspects()

Improvement: Try to improve the scalability to included more deployment of the space X. So, it has the ability to understand the extreme case better.

Import more realistic data, so the design approach can be more realistic.

Using Ground relays for low-latency wide -area routing in megaconstellations

Pors:

* Customization (can adjust to different # of planes and # of satellites in each plane)
* Realistic (Simulated SpaceX Starlink phase 1)
* Dynamic connectivity(Up to 4hrs)

Cons:

* Hardware complexity due to large # of satellites, ISl and ground station
* Computational Intensity.
* Missing precision due to the computational Intensity
* Learning Curve
* Data realistic
* Not Flexible

Delay is not an option

Pros:

* Realistic constellation (SpaceX)
* Customization, 32 different possible phase offsets, higher inclination degree
* Dynamic Connectivity(Longer time frame and real-time traffic)

Cons:

* No network traffic simulation
* No freedom of changing algorithms
* Starlink-specific
* No freedom of topology
* Unrealistic Data, adopt reasonable parameters from first principles
* Lots of assumptions

Datagran routing algorithm for leo

Pros:

Cons:

A Novel DTN Routing Algorithm