

# Seminar Complex Network Analysis

## Project Progress

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## Python Package Dependency Network

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Nodes → Repositories

Edges → Requirements(*Imoprts*)

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Directed Graph

`scipy` → `numpy`

`scipy`  $\nrightarrow$  `numpy`

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**requests=="0.10.0"**

```
{
  "comment_text": "",
  "digests": {
    "md5": "c90a48af18eb4170dbe4832c1104440c",
    "sha256":
"210a82e678c45d433a4ad1f105974b3102a8ab5198872dc0a3238a8750d4c65e"
  },
  "downloads": -1,
  "filename": "requests-0.10.0.tar.gz",
  "has_sig": false,
  "md5_digest": "c90a48af18eb4170dbe4832c1104440c",
  "packagetype": "sdist",
  "python_version": "source",
  "requires_python": null,
  "size": 62046,
  "upload_time": "2012-01-22T05:08:17",
  "upload_time_iso_8601": "2012-01-22T05:08:17.091441Z",
  "url": "https://files.pythonhosted.org/packages/62/35/0230421b8c4efad6624518
028163329ad0c2df9e58e6b3bee013427bf8f6/requests-0.10.0.tar.gz",
  "yanked": false,
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- sort nodes & links based on release date
  - ⇒ Time dependent directed network



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Class Method: forward

add edges with time-stamp  $t$   
set  $t = t + 1$

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```

Class Method: forward

add edges with time-stamp  $t$   
set  $t = t + 1$

Class Method: backward

remove edges with time-stamp  $t$   
set  $t = t - 1$

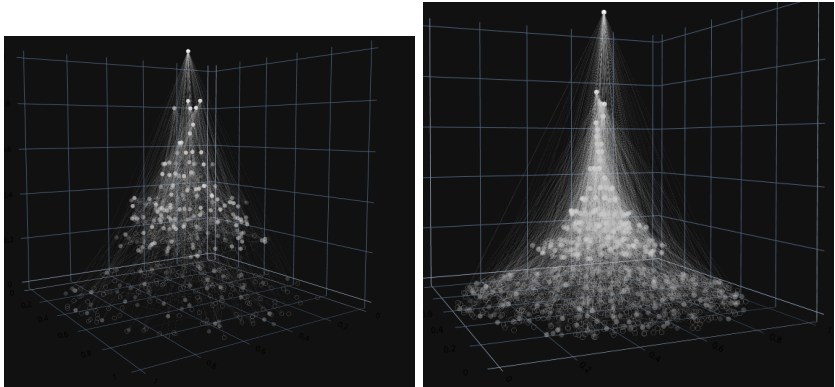
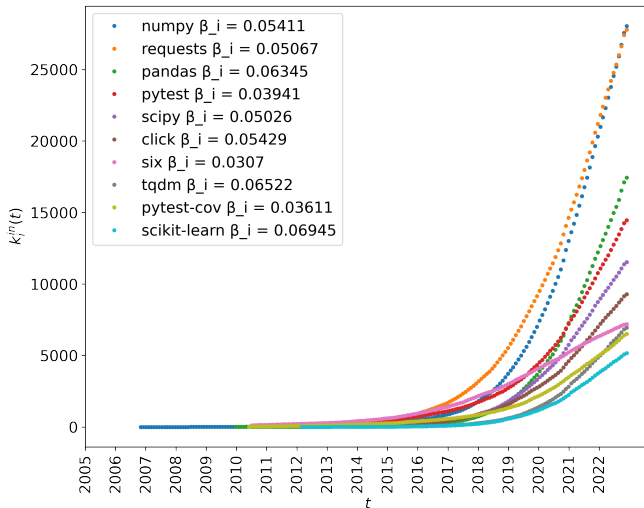
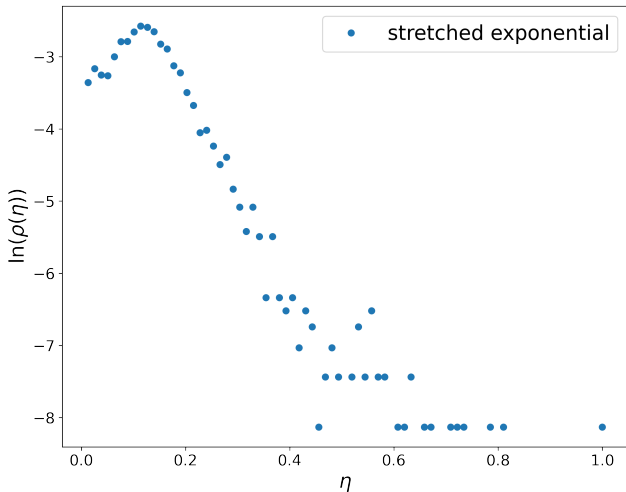


Figure: Left: Graph from 2015, Right: Graph from 2022





Idea: “Light-Ray” Layout



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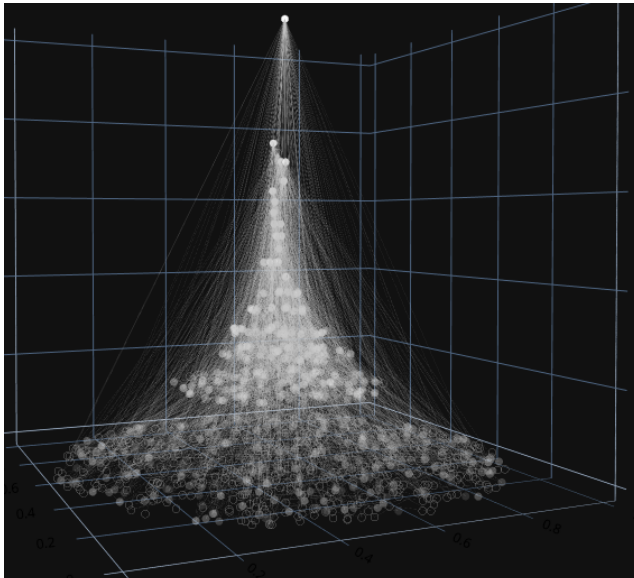
→ separate nodes based on their degree

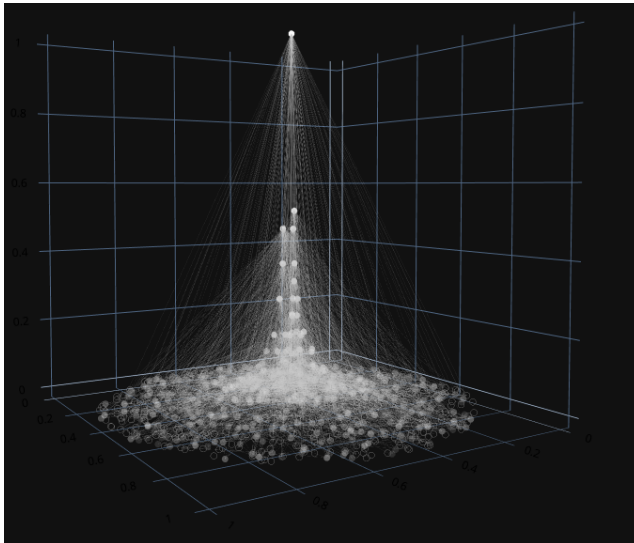
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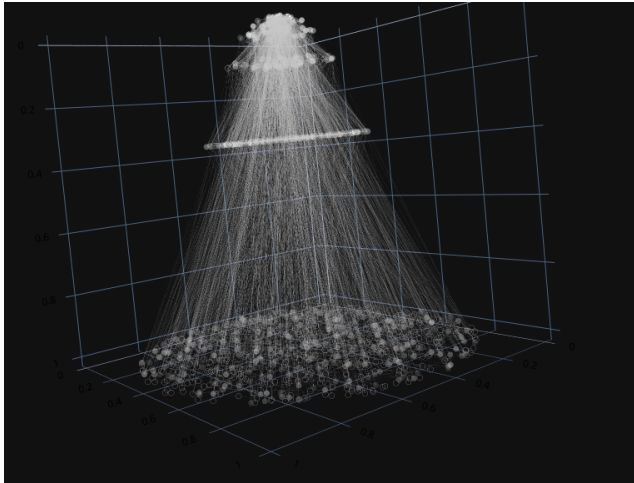
- separate nodes based on their degree
- place them each uniformly on a circle/disks distance

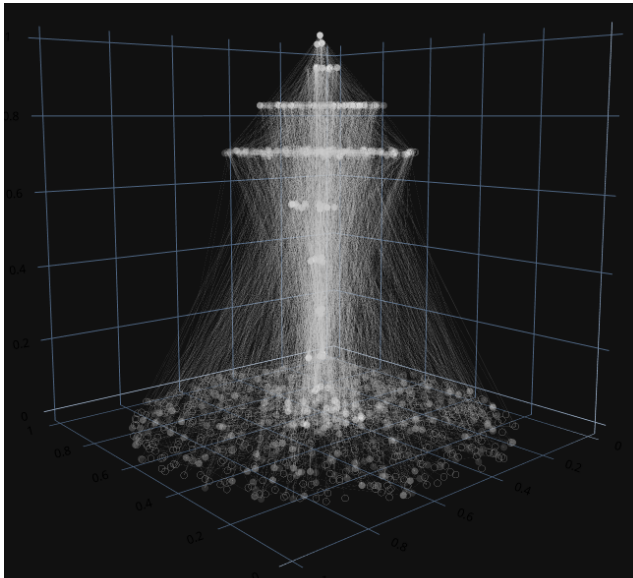
## Idea: “Light-Ray” Layout

- separate nodes based on their degree
- place them each uniformly on a circle/disks
- stack the disks, based on a function representing their distance









- [1] A.L. Barabási. *Network Science*. Cambridge University Press, 2016. ISBN: 9781107076266. URL: <https://books.google.at/books?id=iLtGDQAAQBAJ>.
- [2] Python Software Foundation. *Python Package Index*. URL: <https://pypi.org/> (visited on 03/15/2022).



*To be continued...*

*Thank You!*