

# Topic Modeling of Academic Papers

*by Alexander Hughes*

## BACKGROUND

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arXiv.org (owned by Cornell University) is a repository of scientific papers with a variety of sub-topics within math, physics, computer science, astronomy, and biology.

My text data included the abstracts of +600,000 of these papers

# BACKGROUND

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arXiv.org (owned by Cornell University) is a repository of scientific papers with a variety of sub-topics within math, physics, computer science, astronomy, and biology.

arXiv.org > cs > arXiv:1705.10342

Search or Article ID inside arXiv All papers



Broaden

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Computer Science > Artificial Intelligence

## Deep Learning for Ontology Reasoning

Patrick Hohenecker, Thomas Lukasiewicz

(Submitted on 29 May 2017)

In this work, we present a novel approach to ontology reasoning that is based on deep learning rather than logic-based formal reasoning. To this end, we introduce a new model for statistical relational learning that is built upon deep recursive neural networks, and give experimental evidence that it can easily compete with, or even outperform, existing logic-based reasoners on the task of ontology reasoning. More precisely, we compared our implemented system with one of the best logic-based ontology reasoners at present, RDFox, on a number of large standard benchmark datasets, and found that our system attained high reasoning quality, while being up to two orders of magnitude faster.

Comments: 9 pages

Subjects: Artificial Intelligence (cs.AI); Learning (cs.LG)

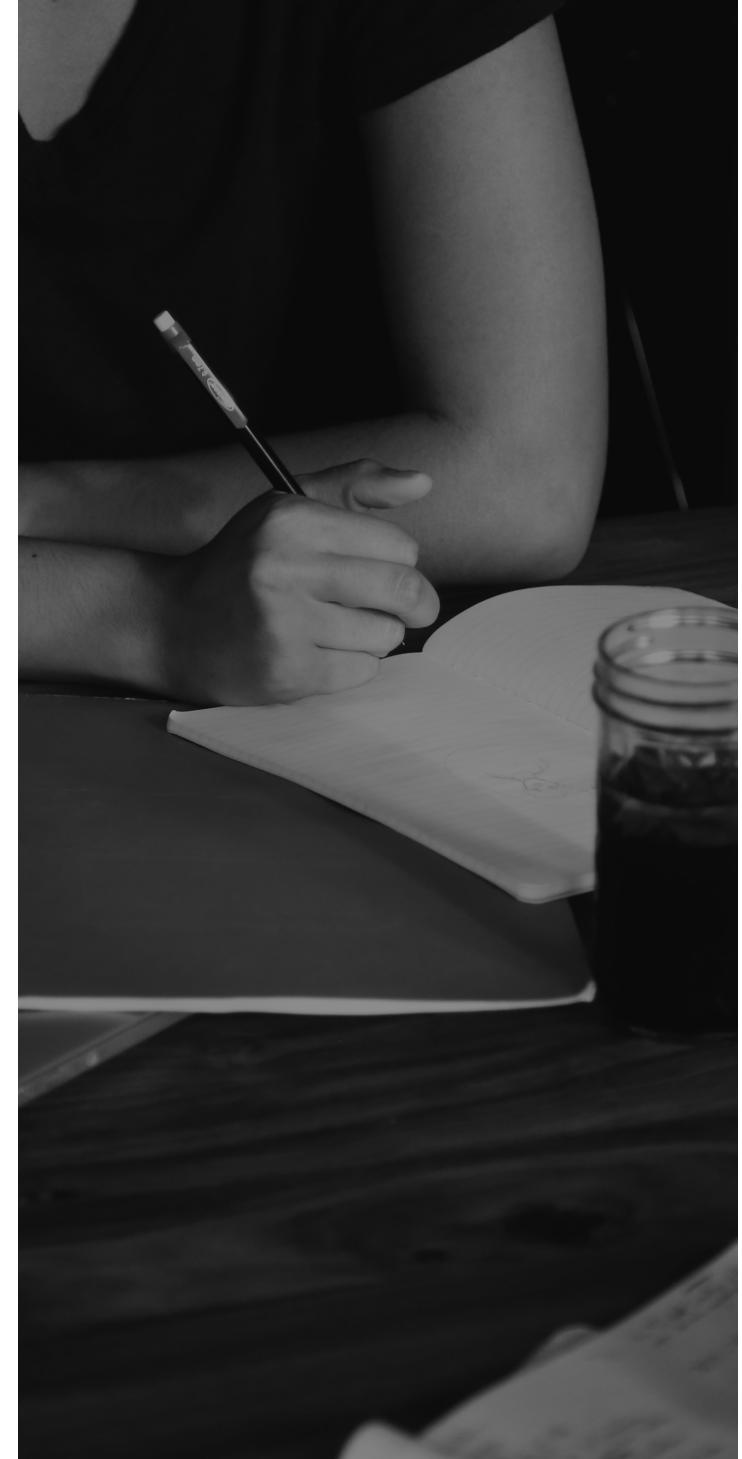
Cite as: [arXiv:1705.10342 \[cs.AI\]](#)

(or [arXiv:1705.10342v1 \[cs.AI\]](#) for this version)

# ACTION

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- The primary goal of the project was to use these abstracts to cluster the papers into a 'category'
- First tried Count Vectorizing --> LDA (gensim)
- Slow and bad results (1 pass)
- Then moved onto tfidf --> NMF (sklearn)
- Much quicker and produced meaningful topics



# TOPICS

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## Topic 1:

models parameters bayesian process inference  
modeling stochastic latent selection markov  
based simple dynamics population

## Topic 5:

learning machine neural deep training  
classification task methods algorithms models  
performance state art features

## Topic 3:

quantum classical theory mechanics  
semiclassical physics chaos states mechanical  
localization body measurement limit atoms  
atom



# TOPICS

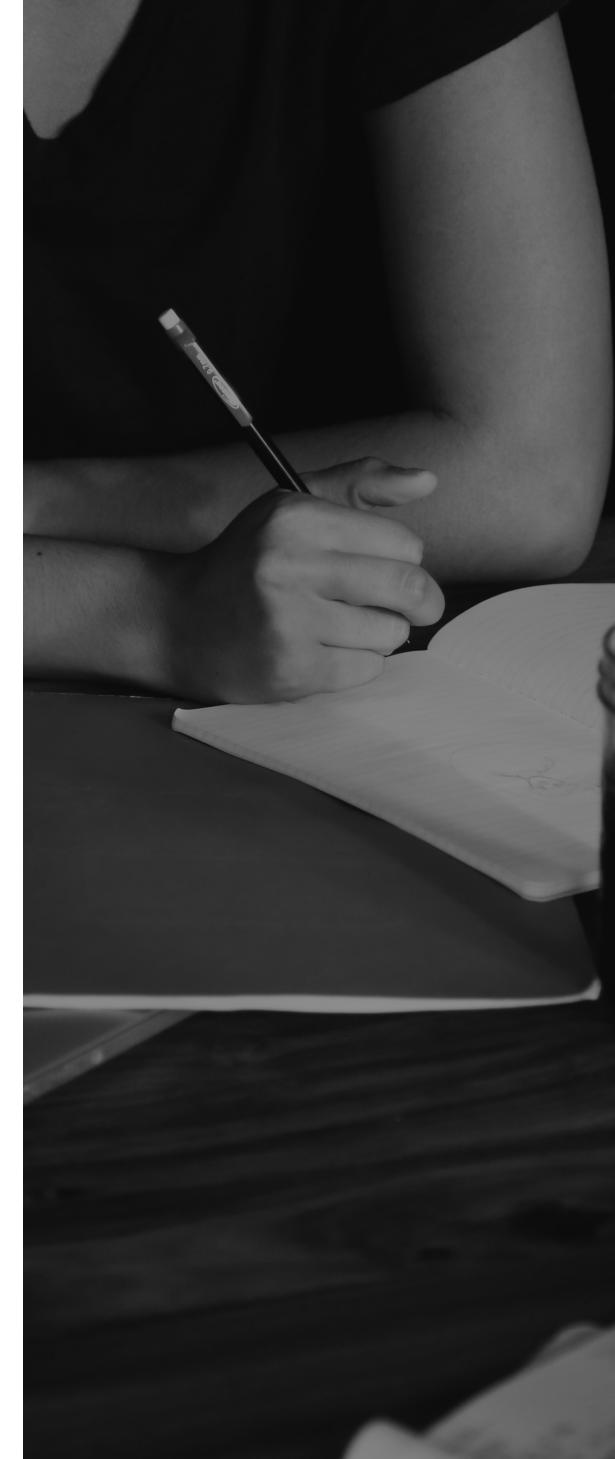
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Topic 16:

equation solutions nonlinear wave differential  
method waves order linear numerical obtained  
exact form

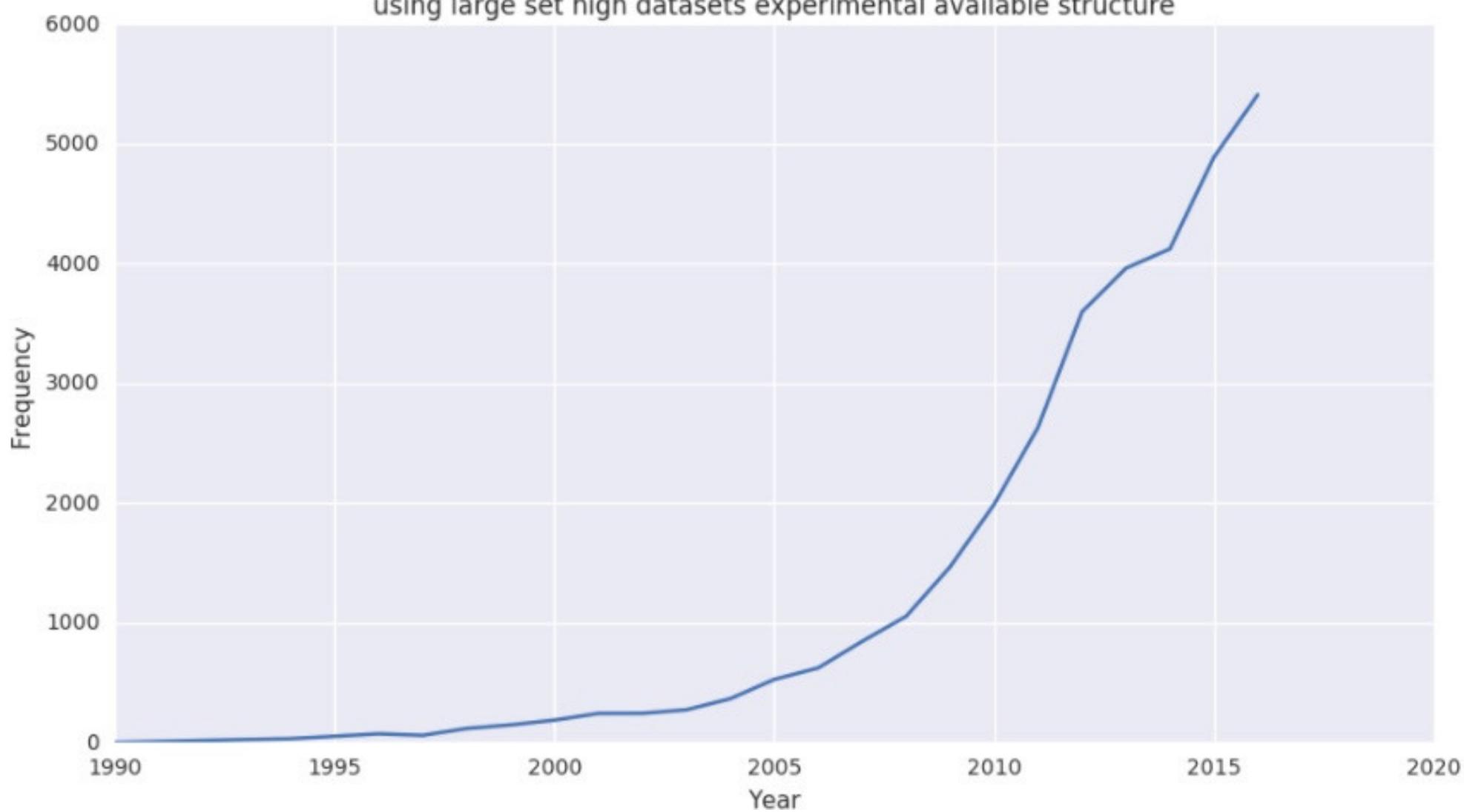
Topic 8:

energy electron beam spectrum high power low  
free kinetic transfer laser wave turbulence  
potential plasma

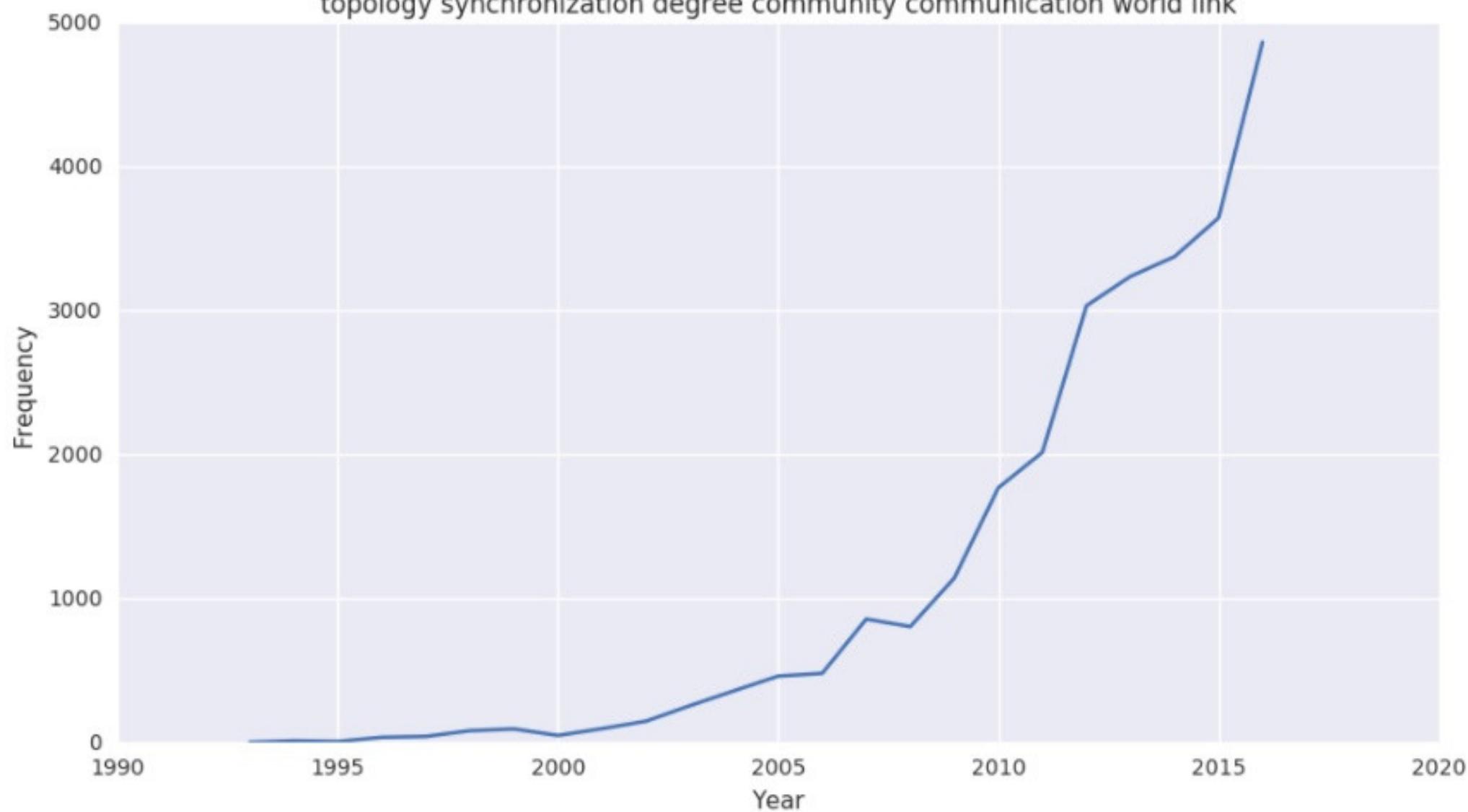


<a href="http://arxiv.org/abs/1704.07371v1">http://arxiv.org/abs/1704.07371v1</a>	2017	We study the key domain wall properties in seg...	9	physics.app-ph
<a href="http://arxiv.org/abs/1704.07450v1">http://arxiv.org/abs/1704.07450v1</a>	2017	An analytical procedure, which couples electri...	9	physics.app-ph
<a href="http://arxiv.org/abs/1705.07970v1">http://arxiv.org/abs/1705.07970v1</a>	2017	Hexagonal boron nitride (h-BN) is a promising ...	9	physics.app-ph
<a href="http://arxiv.org/abs/1704.06599v1">http://arxiv.org/abs/1704.06599v1</a>	2017	The aim of this work is to study heat pump cyc...	9	physics.app-ph
<a href="http://arxiv.org/abs/1705.00542v2">http://arxiv.org/abs/1705.00542v2</a>	2017	Graphene has hugely increased its quality in n...	9	physics.app-ph
<a href="http://arxiv.org/abs/1506.01674v1">http://arxiv.org/abs/1506.01674v1</a>	2015	A solid state mechanism for cooling high-curre...	9	cond-mat.other
<a href="http://arxiv.org/abs/1705.03121v1">http://arxiv.org/abs/1705.03121v1</a>	2017	We investigate magnetic anisotropy and magneti...	9	cond-mat.mes-hall
<a href="http://arxiv.org/abs/1705.08407v1">http://arxiv.org/abs/1705.08407v1</a>	2017	We consider wave propagation along fluid-loade...	9	physics.class-ph
<a href="http://arxiv.org/abs/1705.09157v1">http://arxiv.org/abs/1705.09157v1</a>	2017	We study the spatio-temporal instability gener...	9	physics.optics
<a href="http://arxiv.org/abs/1705.09241v1">http://arxiv.org/abs/1705.09241v1</a>	2017	Diamond-based magnetic field sensors have attr...	9	physics.optics
<i>We review a new</i>				

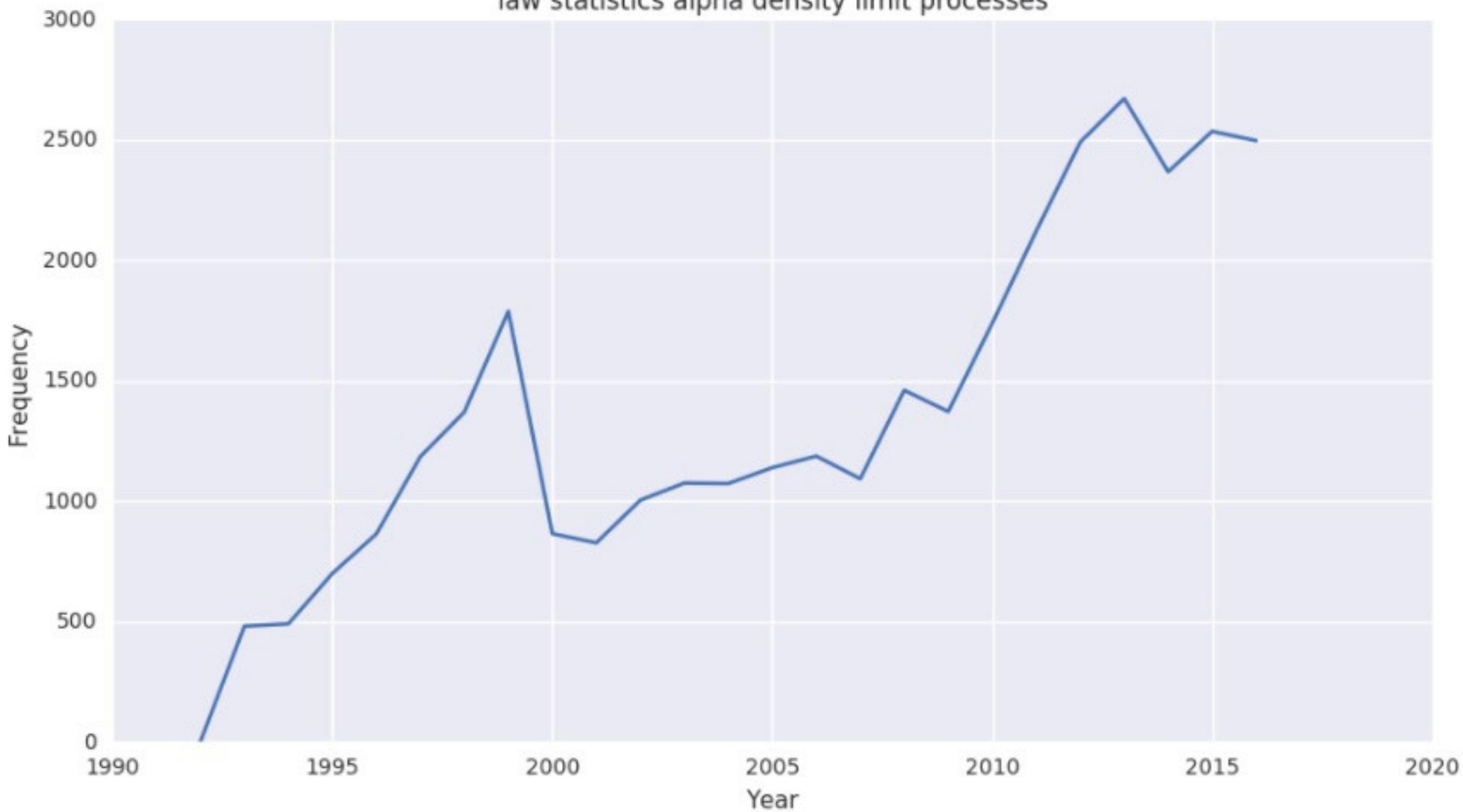
data analysis sets clustering real methods statistical  
using large set high datasets experimental available structure



networks nodes neural social node structure complex  
topology synchronization degree community communication world link



distribution random function probability distributions functions gaussian process power  
law statistics alpha density limit processes



learning machine neural deep training classification  
task methods algorithms models performance state art

