Problem 2: Scraping, Entropy and ICML papers.

Scraping all pdfs from the link - http://proceedings.mlr.press/v70/ with BeautifulSoup

```
In [1]:  import requests
         from bs4 import BeautifulSoup
         import io
         from PyPDF2 import PdfFileReader
```

```
In [2]:  url = "http://proceedings.mlr.press/v70/"
         read = requests.get(url)
         html_content = read.content
         soup = BeautifulSoup(html_content, "html.parser")
```

```
In [3]:  #Getting a list of all the pdfs from the link above
         list_of_pdf = set()
         for i in soup.find_all('a'):
             pdf_list = (i.get('href'))
             if "http" not in pdf_list or ".pdf" not in pdf_list:
                 continue
             print(pdf_list)
             list_of_pdf.add(pdf_list)
```

```
http://proceedings.mlr.press/v70/achab17a/achab17a.pdf
http://proceedings.mlr.press/v70/achab17a/achab17a-supp.pdf
http://proceedings.mlr.press/v70/acharya17a/acharya17a.pdf
http://proceedings.mlr.press/v70/acharya17a/acharya17a-supp.pdf
http://proceedings.mlr.press/v70/achiam17a/achiam17a.pdf
http://proceedings.mlr.press/v70/achiam17a/achiam17a-supp.pdf
http://proceedings.mlr.press/v70/agarwal17a/agarwal17a.pdf
http://proceedings.mlr.press/v70/agarwal17a/agarwal17a-supp.pdf
http://proceedings.mlr.press/v70/akrour17a/akrour17a.pdf
http://proceedings.mlr.press/v70/aksoylar17a/aksoylar17a.pdf
http://proceedings.mlr.press/v70/aksoylar17a/aksoylar17a-supp.pdf
http://proceedings.mlr.press/v70/alaa17a/alaa17a.pdf
http://proceedings.mlr.press/v70/alaa17a/alaa17a-supp.pdf
http://proceedings.mlr.press/v70/ali17a/ali17a.pdf
http://proceedings.mlr.press/v70/ali17a/ali17a-supp.pdf
http://proceedings.mlr.press/v70/allamanis17a/allamanis17a.pdf
http://proceedings.mlr.press/v70/allamanis17a/allamanis17a-supp.pdf
http://proceedings.mlr.press/v70/allen-zhu17a/allen-zhu17a.pdf
http://proceedings.mlr.press/v70/allen-zhu17b/allen-zhu17b.pdf
http://proceedings.mlr.press/v70/allen-zhu17c/allen-zhu17c.pdf
http://proceedings.mlr.press/v70/allen-zhu17d/allen-zhu17d.pdf
http://proceedings.mlr.press/v70/allen-zhu17e/allen-zhu17e.pdf
http://proceedings.mlr.press/v70/amos17a/amos17a.pdf
```

```
http://proceedings.mlr.press/v70/amos17a/amos17a-supp.pdf
http://proceedings.mlr.press/v70/amos17b/amos17b.pdf
http://proceedings.mlr.press/v70/amos17b/amos17b-supp.pdf
http://proceedings.mlr.press/v70/anderson17a/anderson17a.pdf
http://proceedings.mlr.press/v70/anderson17a/anderson17a-supp.pdf
http://proceedings.mlr.press/v70/andreas17a/andreas17a.pdf
http://proceedings.mlr.press/v70/andreas17a/andreas17a-supp.pdf
http://proceedings.mlr.press/v70/anschel17a/anschel17a.pdf
http://proceedings.mlr.press/v70/anschel17a/anschel17a-supp.pdf
http://proceedings.mlr.press/v70/appel17a/appel17a.pdf
http://proceedings.mlr.press/v70/appel17a/appel17a-supp.pdf
http://proceedings.mlr.press/v70/arik17a/arik17a.pdf
http://proceedings.mlr.press/v70/arık17a/arık17a-supp.pdf
http://proceedings.mlr.press/v70/arjevani17a/arjevani17a.pdf
http://proceedings.mlr.press/v70/arjevani17a/arjevani17a-supp.pdf
http://proceedings.mlr.press/v70/arjovsky17a/arjovsky17a.pdf
http://proceedings.mlr.press/v70/arjovsky17a/arjovsky17a-supp.pdf
http://proceedings.mlr.press/v70/arora17a/arora17a.pdf
http://proceedings.mlr.press/v70/arora17a/arora17a-supp.pdf
http://proceedings.mlr.press/v70/arpit17a/arpit17a.pdf
http://proceedings.mlr.press/v70/asadi17a/asadi17a.pdf
http://proceedings.mlr.press/v70/avron17a/avron17a.pdf
http://proceedings.mlr.press/v70/avron17a/avron17a-supp.pdf
http://proceedings.mlr.press/v70/azar17a/azar17a.pdf
http://proceedings.mlr.press/v70/azar17a/azar17a-supp.pdf
http://proceedings.mlr.press/v70/bach17a/bach17a.pdf
http://proceedings.mlr.press/v70/bach17a/bach17a-supp.pdf
http://proceedings.mlr.press/v70/bachem17a/bachem17a.pdf
http://proceedings.mlr.press/v70/bachem17a/bachem17a-supp.pdf
http://proceedings.mlr.press/v70/bachem17b/bachem17b.pdf
http://proceedings.mlr.press/v70/bachman17a/bachman17a.pdf
http://proceedings.mlr.press/v70/backurs17a/backurs17a.pdf
http://proceedings.mlr.press/v70/backurs17a/backurs17a-supp.pdf
http://proceedings.mlr.press/v70/balcan17a/balcan17a.pdf
http://proceedings.mlr.press/v70/balcan17a/balcan17a-supp.pdf
http://proceedings.mlr.press/v70/balduzzi17a/balduzzi17a.pdf
http://proceedings.mlr.press/v70/balduzzi17a/balduzzi17a-supp.pdf
http://proceedings.mlr.press/v70/balduzzi17b/balduzzi17b.pdf
http://proceedings.mlr.press/v70/balduzzi17b/balduzzi17b-supp.pdf
http://proceedings.mlr.press/v70/balduzzi17c/balduzzi17c.pdf
http://proceedings.mlr.press/v70/balduzzi17c/balduzzi17c-supp.pdf
http://proceedings.mlr.press/v70/balle17a/balle17a.pdf
http://proceedings.mlr.press/v70/balle17a/balle17a-supp.pdf
http://proceedings.mlr.press/v70/balog17a/balog17a.pdf
http://proceedings.mlr.press/v70/balog17a/balog17a-supp.pdf
http://proceedings.mlr.press/v70/bamler17a/bamler17a.pdf
http://proceedings.mlr.press/v70/bamler17a/bamler17a-supp.pdf
http://proceedings.mlr.press/v70/baram17a/baram17a.pdf
http://proceedings.mlr.press/v70/barmann17a/barmann17a.pdf
http://proceedings.mlr.press/v70/barmann17a/barmann17a-supp.pdf
http://proceedings.mlr.press/v70/beckham17a/beckham17a.pdf
http://proceedings.mlr.press/v70/begon17a/begon17a.pdf
http://proceedings.mlr.press/v70/begon17a/begon17a-supp.pdf
http://proceedings.mlr.press/v70/belanger17a/belanger17a.pdf
```

```
http://proceedings.mlr.press/v70/belanger17a/belanger17a-supp.pdf
http://proceedings.mlr.press/v70/belilovsky17a/belilovsky17a.pdf
http://proceedings.mlr.press/v70/belilovsky17a/belilovsky17a-supp.pdf
http://proceedings.mlr.press/v70/bellemare17a/bellemare17a.pdf
http://proceedings.mlr.press/v70/bellemare17a/bellemare17a-supp.pdf
http://proceedings.mlr.press/v70/bello17a/bello17a.pdf
http://proceedings.mlr.press/v70/bergmann17a/bergmann17a.pdf
http://proceedings.mlr.press/v70/bernstein17a/bernstein17a.pdf
http://proceedings.mlr.press/v70/bernstein17a/bernstein17a-supp.pdf
http://proceedings.mlr.press/v70/beygelzimer17a/beygelzimer17a.pdf
http://proceedings.mlr.press/v70/beygelzimer17a/beygelzimer17a-supp.pdf
http://proceedings.mlr.press/v70/bian17a/bian17a.pdf
http://proceedings.mlr.press/v70/bian17a/bian17a-supp.pdf
http://proceedings.mlr.press/v70/bogunovic17a/bogunovic17a.pdf
http://proceedings.mlr.press/v70/bogunovic17a/bogunovic17a-supp.pdf
http://proceedings.mlr.press/v70/bojanowski17a/bojanowski17a.pdf
http://proceedings.mlr.press/v70/bolukbasi17a/bolukbasi17a.pdf
http://proceedings.mlr.press/v70/bora17a/bora17a.pdf
http://proceedings.mlr.press/v70/bora17a/bora17a-supp.pdf
http://proceedings.mlr.press/v70/bosnjak17a/bosnjak17a.pdf
http://proceedings.mlr.press/v70/bosnjak17a/bosnjak17a-supp.pdf
http://proceedings.mlr.press/v70/botev17a/botev17a.pdf
http://proceedings.mlr.press/v70/botev17a/botev17a-supp.pdf
http://proceedings.mlr.press/v70/braun17a/braun17a.pdf
http://proceedings.mlr.press/v70/braun17a/braun17a-supp.pdf
http://proceedings.mlr.press/v70/braverman17a/braverman17a.pdf
http://proceedings.mlr.press/v70/braverman17a/braverman17a-supp.pdf
http://proceedings.mlr.press/v70/briol17a/briol17a.pdf
http://proceedings.mlr.press/v70/briol17a/briol17a-supp.pdf
http://proceedings.mlr.press/v70/brown17a/brown17a.pdf
http://proceedings.mlr.press/v70/brown17a/brown17a-supp.pdf
http://proceedings.mlr.press/v70/brutzkus17a/brutzkus17a.pdf
http://proceedings.mlr.press/v70/brutzkus17a/brutzkus17a-supp.pdf
http://proceedings.mlr.press/v70/budden17a/budden17a.pdf
http://proceedings.mlr.press/v70/budden17a/budden17a-supp.pdf
http://proceedings.mlr.press/v70/busa-fekete17a/busa-fekete17a.pdf
http://proceedings.mlr.press/v70/busa-fekete17a/busa-fekete17a-supp.pdf
http://proceedings.mlr.press/v70/cai17a/cai17a.pdf
http://proceedings.mlr.press/v70/cai17a/cai17a-supp.pdf
http://proceedings.mlr.press/v70/calandriello17a/calandriello17a.pdf
http://proceedings.mlr.press/v70/calandriello17a/calandriello17a-supp.pdf
http://proceedings.mlr.press/v70/carmon17a/carmon17a.pdf
http://proceedings.mlr.press/v70/carmon17a/carmon17a-supp.pdf
http://proceedings.mlr.press/v70/carriere17a/carriere17a.pdf
http://proceedings.mlr.press/v70/chang17a/chang17a.pdf
http://proceedings.mlr.press/v70/chang17a/chang17a-supp.pdf
http://proceedings.mlr.press/v70/chaudhry17a/chaudhry17a.pdf
http://proceedings.mlr.press/v70/chaudhry17a/chaudhry17a-supp.pdf
http://proceedings.mlr.press/v70/chaudhuri17a/chaudhuri17a.pdf
http://proceedings.mlr.press/v70/chaudhuri17a/chaudhuri17a-supp.pdf
http://proceedings.mlr.press/v70/chebotar17a/chebotar17a.pdf
http://proceedings.mlr.press/v70/chebotar17a/chebotar17a-supp.pdf
http://proceedings.mlr.press/v70/chen17a/chen17a.pdf
http://proceedings.mlr.press/v70/chen17a/chen17a-supp.pdf
```

```
http://proceedings.mlr.press/v70/chen17b/chen17b.pdf
http://proceedings.mlr.press/v70/chen17c/chen17c.pdf
http://proceedings.mlr.press/v70/chen17c/chen17c-supp.pdf
http://proceedings.mlr.press/v70/chen17d/chen17d.pdf
http://proceedings.mlr.press/v70/chen17d/chen17d-supp.pdf
http://proceedings.mlr.press/v70/chen17e/chen17e.pdf
http://proceedings.mlr.press/v70/chen17f/chen17f.pdf
http://proceedings.mlr.press/v70/chen17g/chen17g.pdf
http://proceedings.mlr.press/v70/chen17g/chen17g-supp.pdf
http://proceedings.mlr.press/v70/chen17h/chen17h.pdf
http://proceedings.mlr.press/v70/chen17h/chen17h-supp.pdf
http://proceedings.mlr.press/v70/chen17i/chen17i.pdf
http://proceedings.mlr.press/v70/cherapanamjeri17a/cherapanamjeri17a.pdf
http://proceedings.mlr.press/v70/cherapanamjeri17a/cherapanamjeri17a-supp
.pdf
http://proceedings.mlr.press/v70/chierichetti17a/chierichetti17a.pdf
http://proceedings.mlr.press/v70/cho17a/cho17a.pdf
http://proceedings.mlr.press/v70/choi17a/choi17a.pdf
http://proceedings.mlr.press/v70/chou17a/chou17a.pdf
http://proceedings.mlr.press/v70/chou17a/chou17a-supp.pdf
http://proceedings.mlr.press/v70/chowdhury17a/chowdhury17a.pdf
http://proceedings.mlr.press/v70/chowdhury17a/chowdhury17a-supp.pdf
http://proceedings.mlr.press/v70/cisse17a/cisse17a.pdf
http://proceedings.mlr.press/v70/cong17a/cong17a.pdf
http://proceedings.mlr.press/v70/cong17a/cong17a-supp.pdf
http://proceedings.mlr.press/v70/cortes17a/cortes17a.pdf
http://proceedings.mlr.press/v70/cortes17a/cortes17a-supp.pdf
http://proceedings.mlr.press/v70/cutajar17a/cutajar17a.pdf
http://proceedings.mlr.press/v70/cutajar17a/cutajar17a-supp.pdf
http://proceedings.mlr.press/v70/cuturi17a/cuturi17a.pdf
http://proceedings.mlr.press/v70/cuturi17a/cuturi17a-supp.pdf
http://proceedings.mlr.press/v70/czarnecki17a/czarnecki17a.pdf
http://proceedings.mlr.press/v70/czarnecki17a/czarnecki17a-supp.pdf
http://proceedings.mlr.press/v70/dai17a/dai17a.pdf
http://proceedings.mlr.press/v70/dai17a/dai17a-supp.pdf
http://proceedings.mlr.press/v70/daume17a/daume17a.pdf
http://proceedings.mlr.press/v70/daume17a/daume17a-supp.pdf
http://proceedings.mlr.press/v70/dauphin17a/dauphin17a.pdf
http://proceedings.mlr.press/v70/dawson17a/dawson17a.pdf
http://proceedings.mlr.press/v70/dawson17a/dawson17a-supp.pdf
http://proceedings.mlr.press/v70/daxberger17a/daxberger17a.pdf
http://proceedings.mlr.press/v70/daxberger17a/daxberger17a-supp.pdf
http://proceedings.mlr.press/v70/dembczynski17a/dembczynski17a.pdf
http://proceedings.mlr.press/v70/dembczynski17a/dembczynski17a-supp.pdf
http://proceedings.mlr.press/v70/dempsey17a/dempsey17a.pdf
http://proceedings.mlr.press/v70/dempsey17a/dempsey17a-supp.pdf
http://proceedings.mlr.press/v70/deng17a/deng17a.pdf
http://proceedings.mlr.press/v70/devlin17a/devlin17a.pdf
http://proceedings.mlr.press/v70/devlin17a/devlin17a-supp.pdf
http://proceedings.mlr.press/v70/diakonikolas17a/diakonikolas17a.pdf
http://proceedings.mlr.press/v70/diakonikolas17a/diakonikolas17a-supp.pdf
http://proceedings.mlr.press/v70/dinh17a/dinh17a.pdf
http://proceedings.mlr.press/v70/dinh17a/dinh17a-supp.pdf
http://proceedings.mlr.press/v70/dinh17b/dinh17b.pdf
```

```
http://proceedings.mlr.press/v70/dinh17b/dinh17b-supp.pdf
http://proceedings.mlr.press/v70/domke17a/domke17a.pdf
http://proceedings.mlr.press/v70/domke17a/domke17a-supp.pdf
http://proceedings.mlr.press/v70/donahue17a/donahue17a.pdf
http://proceedings.mlr.press/v70/du17a/du17a.pdf
http://proceedings.mlr.press/v70/du17a/du17a-supp.pdf
http://proceedings.mlr.press/v70/eckstein17a/eckstein17a.pdf
http://proceedings.mlr.press/v70/engel17a/engel17a.pdf
http://proceedings.mlr.press/v70/fahandar17a/fahandar17a.pdf
http://proceedings.mlr.press/v70/fahandar17a/fahandar17a-supp.pdf
http://proceedings.mlr.press/v70/falahatgar17a/falahatgar17a.pdf
http://proceedings.mlr.press/v70/falahatgar17a/falahatgar17a-supp.pdf
http://proceedings.mlr.press/v70/farajtabar17a/farajtabar17a.pdf
http://proceedings.mlr.press/v70/farajtabar17a/farajtabar17a-supp.pdf
http://proceedings.mlr.press/v70/farina17a/farina17a.pdf
http://proceedings.mlr.press/v70/feldman17a/feldman17a.pdf
http://proceedings.mlr.press/v70/finn17a/finn17a.pdf
http://proceedings.mlr.press/v70/finn17a/finn17a-supp.pdf
http://proceedings.mlr.press/v70/foerster17a/foerster17a.pdf
http://proceedings.mlr.press/v70/foerster17b/foerster17b.pdf
http://proceedings.mlr.press/v70/forney17a/forney17a.pdf
http://proceedings.mlr.press/v70/forney17a/forney17a-supp.pdf
http://proceedings.mlr.press/v70/franceschi17a/franceschi17a.pdf
http://proceedings.mlr.press/v70/franceschi17a/franceschi17a-supp.pdf
http://proceedings.mlr.press/v70/futoma17a/futoma17a.pdf
http://proceedings.mlr.press/v70/gal17a/gal17a.pdf
http://proceedings.mlr.press/v70/gao17a/gao17a.pdf
http://proceedings.mlr.press/v70/garber17a/garber17a.pdf
http://proceedings.mlr.press/v70/garber17a/garber17a-supp.pdf
http://proceedings.mlr.press/v70/gaunt17a/gaunt17a.pdf
http://proceedings.mlr.press/v70/gaunt17a/gaunt17a-supp.pdf
http://proceedings.mlr.press/v70/gautier17a/gautier17a.pdf
http://proceedings.mlr.press/v70/gautier17a/gautier17a-supp.pdf
http://proceedings.mlr.press/v70/ge17a/ge17a.pdf
http://proceedings.mlr.press/v70/ge17a/ge17a-supp.pdf
http://proceedings.mlr.press/v70/gehring17a/gehring17a.pdf
http://proceedings.mlr.press/v70/gehring17a/gehring17a-supp.pdf
http://proceedings.mlr.press/v70/gentile17a/gentile17a.pdf
http://proceedings.mlr.press/v70/gilmer17a/gilmer17a.pdf
http://proceedings.mlr.press/v70/gilmer17a/gilmer17a-supp.pdf
http://proceedings.mlr.press/v70/goldstein17a/goldstein17a.pdf
http://proceedings.mlr.press/v70/gonzalez17a/gonzalez17a.pdf
http://proceedings.mlr.press/v70/gorham17a/gorham17a.pdf
http://proceedings.mlr.press/v70/gorham17a/gorham17a-supp.pdf
http://proceedings.mlr.press/v70/grave17a/grave17a.pdf
http://proceedings.mlr.press/v70/graves17a/graves17a.pdf
http://proceedings.mlr.press/v70/guo17a/guo17a.pdf
http://proceedings.mlr.press/v70/guo17a/guo17a-supp.pdf
http://proceedings.mlr.press/v70/gupta17a/gupta17a.pdf
http://proceedings.mlr.press/v70/gupta17a/gupta17a-supp.pdf
http://proceedings.mlr.press/v70/gygli17a/gygli17a.pdf
http://proceedings.mlr.press/v70/haarnoja17a/haarnoja17a.pdf
http://proceedings.mlr.press/v70/haarnoja17a/haarnoja17a-supp.pdf
http://proceedings.mlr.press/v70/hadjeres17a/hadjeres17a.pdf
```

```
http://proceedings.mlr.press/v70/hallak17a/hallak17a.pdf
http://proceedings.mlr.press/v70/hallak17a/hallak17a-supp.pdf
http://proceedings.mlr.press/v70/han17a/han17a.pdf
http://proceedings.mlr.press/v70/han17a/han17a-supp.pdf
http://proceedings.mlr.press/v70/hanna17a/hanna17a.pdf
http://proceedings.mlr.press/v70/hanna17a/hanna17a-supp.pdf
http://proceedings.mlr.press/v70/harandi17a/harandi17a.pdf
http://proceedings.mlr.press/v70/harandi17a/harandi17a-supp.pdf
http://proceedings.mlr.press/v70/hartford17a/hartford17a.pdf
http://proceedings.mlr.press/v70/hartford17a/hartford17a-supp.pdf
http://proceedings.mlr.press/v70/hassidim17a/hassidim17a.pdf
http://proceedings.mlr.press/v70/hazan17a/hazan17a.pdf
http://proceedings.mlr.press/v70/hazan17a/hazan17a-supp.pdf
http://proceedings.mlr.press/v70/he17a/he17a.pdf
http://proceedings.mlr.press/v70/heckel17a/heckel17a.pdf
http://proceedings.mlr.press/v70/heckel17a/heckel17a-supp.pdf
http://proceedings.mlr.press/v70/henriques17a/henriques17a.pdf
http://proceedings.mlr.press/v70/hernandez-lobato17a/hernandez-lobato17a.
pdf
http://proceedings.mlr.press/v70/higgins17a/higgins17a.pdf
http://proceedings.mlr.press/v70/higgins17a/higgins17a-supp.pdf
http://proceedings.mlr.press/v70/hirayama17a/hirayama17a.pdf
http://proceedings.mlr.press/v70/hirayama17a/hirayama17a-supp.pdf
http://proceedings.mlr.press/v70/ho17a/ho17a.pdf
http://proceedings.mlr.press/v70/ho17a/ho17a-supp.pdf
http://proceedings.mlr.press/v70/hoffman17a/hoffman17a.pdf
http://proceedings.mlr.press/v70/hoffman17a/hoffman17a-supp.pdf
http://proceedings.mlr.press/v70/honer17a/honer17a.pdf
http://proceedings.mlr.press/v70/honer17a/honer17a-supp.pdf
http://proceedings.mlr.press/v70/hong17a/hong17a.pdf
http://proceedings.mlr.press/v70/hong17a/hong17a-supp.pdf
http://proceedings.mlr.press/v70/hornakova17a/hornakova17a.pdf
http://proceedings.mlr.press/v70/hornakova17a/hornakova17a-supp.pdf
http://proceedings.mlr.press/v70/hu17a/hu17a.pdf
http://proceedings.mlr.press/v70/hu17a/hu17a-supp.pdf
http://proceedings.mlr.press/v70/hu17b/hu17b.pdf
http://proceedings.mlr.press/v70/hu17b/hu17b-supp.pdf
http://proceedings.mlr.press/v70/hu17c/hu17c.pdf
http://proceedings.mlr.press/v70/hu17d/hu17d.pdf
http://proceedings.mlr.press/v70/hu17d/hu17d-supp.pdf
http://proceedings.mlr.press/v70/hu17e/hu17e.pdf
http://proceedings.mlr.press/v70/hu17e/hu17e-supp.pdf
http://proceedings.mlr.press/v70/imaizumi17a/imaizumi17a.pdf
http://proceedings.mlr.press/v70/imaizumi17a/imaizumi17a-supp.pdf
http://proceedings.mlr.press/v70/ingraham17a/ingraham17a.pdf
http://proceedings.mlr.press/v70/ingraham17a/ingraham17a-supp.pdf
http://proceedings.mlr.press/v70/jabbari17a/jabbari17a.pdf
http://proceedings.mlr.press/v70/jabbari17a/jabbari17a-supp.pdf
http://proceedings.mlr.press/v70/jaderberg17a/jaderberg17a.pdf
http://proceedings.mlr.press/v70/jaderberg17a/jaderberg17a-supp.pdf
http://proceedings.mlr.press/v70/jain17a/jain17a.pdf
http://proceedings.mlr.press/v70/jaques17a/jaques17a.pdf
http://proceedings.mlr.press/v70/jenatton17a/jenatton17a.pdf
http://proceedings.mlr.press/v70/jenatton17a/jenatton17a-supp.pdf
```

```
http://proceedings.mlr.press/v70/jernite17a/jernite17a.pdf
http://proceedings.mlr.press/v70/jernite17a/jernite17a-supp.pdf
http://proceedings.mlr.press/v70/ji17a/ji17a.pdf
http://proceedings.mlr.press/v70/jiang17a/jiang17a.pdf
http://proceedings.mlr.press/v70/jiang17a/jiang17a-supp.pdf
http://proceedings.mlr.press/v70/jiang17b/jiang17b.pdf
http://proceedings.mlr.press/v70/jiang17b/jiang17b-supp.pdf
http://proceedings.mlr.press/v70/jiang17c/jiang17c.pdf
http://proceedings.mlr.press/v70/jiang17c/jiang17c-supp.pdf
http://proceedings.mlr.press/v70/jiang17d/jiang17d.pdf
http://proceedings.mlr.press/v70/jiang17d/jiang17d-supp.pdf
http://proceedings.mlr.press/v70/jin17a/jin17a.pdf
http://proceedings.mlr.press/v70/jin17a/jin17a-supp.pdf
http://proceedings.mlr.press/v70/jing17a/jing17a.pdf
http://proceedings.mlr.press/v70/jitkrittum17a/jitkrittum17a.pdf
http://proceedings.mlr.press/v70/jitkrittum17a/jitkrittum17a-supp.pdf
http://proceedings.mlr.press/v70/johnson17a/johnson17a.pdf
http://proceedings.mlr.press/v70/johnson17a/johnson17a-supp.pdf
http://proceedings.mlr.press/v70/kakizaki17a/kakizaki17a.pdf
http://proceedings.mlr.press/v70/kakizaki17a/kakizaki17a-supp.pdf
http://proceedings.mlr.press/v70/kalchbrenner17a/kalchbrenner17a.pdf
http://proceedings.mlr.press/v70/kale17a/kale17a.pdf
http://proceedings.mlr.press/v70/kale17a/kale17a-supp.pdf
http://proceedings.mlr.press/v70/kallus17a/kallus17a.pdf
http://proceedings.mlr.press/v70/kallus17a/kallus17a-supp.pdf
http://proceedings.mlr.press/v70/kandasamy17a/kandasamy17a.pdf
http://proceedings.mlr.press/v70/kandasamy17a/kandasamy17a-supp.pdf
http://proceedings.mlr.press/v70/kansky17a/kansky17a.pdf
http://proceedings.mlr.press/v70/kansky17a/kansky17a-supp.pdf
http://proceedings.mlr.press/v70/katt17a/katt17a.pdf
http://proceedings.mlr.press/v70/katt17a/katt17a-supp.pdf
http://proceedings.mlr.press/v70/kearns17a/kearns17a.pdf
http://proceedings.mlr.press/v70/khanna17a/khanna17a.pdf
http://proceedings.mlr.press/v70/khanna17a/khanna17a-supp.pdf
http://proceedings.mlr.press/v70/khasanova17a/khasanova17a.pdf
http://proceedings.mlr.press/v70/khasanova17a/khasanova17a-supp.pdf
http://proceedings.mlr.press/v70/kim17a/kim17a.pdf
http://proceedings.mlr.press/v70/kim17b/kim17b.pdf
http://proceedings.mlr.press/v70/kim17b/kim17b-supp.pdf
http://proceedings.mlr.press/v70/kocaoglu17a/kocaoglu17a.pdf
http://proceedings.mlr.press/v70/kocaoglu17a/kocaoglu17a-supp.pdf
http://proceedings.mlr.press/v70/koh17a/koh17a.pdf
http://proceedings.mlr.press/v70/koh17a/koh17a-supp.pdf
http://proceedings.mlr.press/v70/kohler17a/kohler17a.pdf
http://proceedings.mlr.press/v70/kohler17a/kohler17a-supp.pdf
http://proceedings.mlr.press/v70/kolesnikov17a/kolesnikov17a.pdf
http://proceedings.mlr.press/v70/krishnamurthy17a/krishnamurthy17a.pdf
http://proceedings.mlr.press/v70/krishnamurthy17a/krishnamurthy17a-supp.p
df
http://proceedings.mlr.press/v70/kucukelbir17a/kucukelbir17a.pdf
http://proceedings.mlr.press/v70/kumar17a/kumar17a.pdf
http://proceedings.mlr.press/v70/kusner17a/kusner17a.pdf
http://proceedings.mlr.press/v70/kusner17a/kusner17a-supp.pdf
http://proceedings.mlr.press/v70/laclau17a/laclau17a.pdf
```

```
http://proceedings.mlr.press/v70/laclau17a/laclau17a-supp.pdf
http://proceedings.mlr.press/v70/lan17a/lan17a.pdf
http://proceedings.mlr.press/v70/lan17a/lan17a-supp.pdf
http://proceedings.mlr.press/v70/lattanzi17a/lattanzi17a.pdf
http://proceedings.mlr.press/v70/law17a/law17a.pdf
http://proceedings.mlr.press/v70/le17a/le17a.pdf
http://proceedings.mlr.press/v70/le17a/le17a-supp.pdf
http://proceedings.mlr.press/v70/lee17a/lee17a.pdf
http://proceedings.mlr.press/v70/lee17a/lee17a-supp.pdf
http://proceedings.mlr.press/v70/lee17b/lee17b.pdf
http://proceedings.mlr.press/v70/lee17b/lee17b-supp.pdf
http://proceedings.mlr.press/v70/lei17a/lei17a.pdf
http://proceedings.mlr.press/v70/lei17b/lei17b.pdf
http://proceedings.mlr.press/v70/lei17b/lei17b-supp.pdf
http://proceedings.mlr.press/v70/levy17a/levy17a.pdf
http://proceedings.mlr.press/v70/levy17a/levy17a-supp.pdf
http://proceedings.mlr.press/v70/li17a/li17a.pdf
http://proceedings.mlr.press/v70/li17a/li17a-supp.pdf
http://proceedings.mlr.press/v70/li17b/li17b.pdf
http://proceedings.mlr.press/v70/li17b/li17b-supp.pdf
http://proceedings.mlr.press/v70/li17c/li17c.pdf
http://proceedings.mlr.press/v70/li17c/li17c-supp.pdf
http://proceedings.mlr.press/v70/li17d/li17d.pdf
http://proceedings.mlr.press/v70/li17d/li17d-supp.pdf
http://proceedings.mlr.press/v70/li17e/li17e.pdf
http://proceedings.mlr.press/v70/li17f/li17f.pdf
http://proceedings.mlr.press/v70/li17f/li17f-supp.pdf
http://proceedings.mlr.press/v70/li17g/li17g.pdf
http://proceedings.mlr.press/v70/li17g/li17g-supp.pdf
http://proceedings.mlr.press/v70/lindgren17a/lindgren17a.pdf
http://proceedings.mlr.press/v70/lipor17a/lipor17a.pdf
http://proceedings.mlr.press/v70/lipor17a/lipor17a-supp.pdf
http://proceedings.mlr.press/v70/liu17a/liu17a.pdf
http://proceedings.mlr.press/v70/liu17b/liu17b.pdf
http://proceedings.mlr.press/v70/liu17b/liu17b-supp.pdf
http://proceedings.mlr.press/v70/liu17c/liu17c.pdf
http://proceedings.mlr.press/v70/liu17d/liu17d.pdf
http://proceedings.mlr.press/v70/liu17e/liu17e.pdf
http://proceedings.mlr.press/v70/liu17e/liu17e-supp.pdf
http://proceedings.mlr.press/v70/liu17f/liu17f.pdf
http://proceedings.mlr.press/v70/livni17a/livni17a.pdf
http://proceedings.mlr.press/v70/long17a/long17a.pdf
http://proceedings.mlr.press/v70/louizos17a/louizos17a.pdf
http://proceedings.mlr.press/v70/loukas17a/loukas17a.pdf
http://proceedings.mlr.press/v70/luo17a/luo17a.pdf
http://proceedings.mlr.press/v70/lv17a/lv17a.pdf
http://proceedings.mlr.press/v70/lyu17a/lyu17a.pdf
http://proceedings.mlr.press/v70/lyu17a/lyu17a-supp.pdf
http://proceedings.mlr.press/v70/ma17a/ma17a.pdf
http://proceedings.mlr.press/v70/ma17a/ma17a-supp.pdf
http://proceedings.mlr.press/v70/ma17b/ma17b.pdf
http://proceedings.mlr.press/v70/ma17b/ma17b-supp.pdf
http://proceedings.mlr.press/v70/macglashan17a/macglashan17a.pdf
http://proceedings.mlr.press/v70/machado17a/machado17a.pdf
```

```
http://proceedings.mlr.press/v70/machado17a/machado17a-supp.pdf
http://proceedings.mlr.press/v70/mair17a/mair17a.pdf
http://proceedings.mlr.press/v70/malherbe17a/malherbe17a.pdf
http://proceedings.mlr.press/v70/mao17a/mao17a.pdf
http://proceedings.mlr.press/v70/mao17a/mao17a-supp.pdf
http://proceedings.mlr.press/v70/masegosa17a/masegosa17a.pdf
http://proceedings.mlr.press/v70/masegosa17a/masegosa17a-supp.pdf
http://proceedings.mlr.press/v70/maystre17a/maystre17a.pdf
http://proceedings.mlr.press/v70/maystre17a/maystre17a-supp.pdf
http://proceedings.mlr.press/v70/maystre17b/maystre17b.pdf
http://proceedings.mlr.press/v70/mcgill17a/mcgill17a.pdf
http://proceedings.mlr.press/v70/mcnamara17a/mcnamara17a.pdf
http://proceedings.mlr.press/v70/mei17a/mei17a.pdf
http://proceedings.mlr.press/v70/mescheder17a/mescheder17a.pdf
http://proceedings.mlr.press/v70/mescheder17a/mescheder17a-supp.pdf
http://proceedings.mlr.press/v70/mhammedi17a/mhammedi17a.pdf
http://proceedings.mlr.press/v70/mhammedi17a/mhammedi17a-supp.pdf
http://proceedings.mlr.press/v70/miao17a/miao17a.pdf
http://proceedings.mlr.press/v70/miao17a/miao17a-supp.pdf
http://proceedings.mlr.press/v70/miller17a/miller17a.pdf
http://proceedings.mlr.press/v70/miller17a/miller17a-supp.pdf
http://proceedings.mlr.press/v70/mirhoseini17a/mirhoseini17a.pdf
http://proceedings.mlr.press/v70/mirrokni17a/mirrokni17a.pdf
http://proceedings.mlr.press/v70/mirrokni17a/mirrokni17a-supp.pdf
http://proceedings.mlr.press/v70/mirzasoleiman17a/mirzasoleiman17a.pdf
http://proceedings.mlr.press/v70/mirzasoleiman17a/mirzasoleiman17a-supp.p
df
http://proceedings.mlr.press/v70/mishra17a/mishra17a.pdf
http://proceedings.mlr.press/v70/mishra17a/mishra17a-supp.pdf
http://proceedings.mlr.press/v70/mitliagkas17a/mitliagkas17a.pdf
http://proceedings.mlr.press/v70/mitliagkas17a/mitliagkas17a-supp.pdf
http://proceedings.mlr.press/v70/mitrovic17a/mitrovic17a.pdf
http://proceedings.mlr.press/v70/mitrovic17a/mitrovic17a-supp.pdf
http://proceedings.mlr.press/v70/mohajer17a/mohajer17a.pdf
http://proceedings.mlr.press/v70/mohajer17a/mohajer17a-supp.pdf
http://proceedings.mlr.press/v70/molchanov17a/molchanov17a.pdf
http://proceedings.mlr.press/v70/mollaysa17a/mollaysa17a.pdf
http://proceedings.mlr.press/v70/mollaysa17a/mollaysa17a-supp.pdf
http://proceedings.mlr.press/v70/mou17a/mou17a.pdf
http://proceedings.mlr.press/v70/mroueh17a/mroueh17a.pdf
http://proceedings.mlr.press/v70/mroueh17a/mroueh17a-supp.pdf
http://proceedings.mlr.press/v70/mueller17a/mueller17a.pdf
http://proceedings.mlr.press/v70/mueller17a/mueller17a-supp.pdf
http://proceedings.mlr.press/v70/mukkamala17a/mukkamala17a.pdf
http://proceedings.mlr.press/v70/mukkamala17a/mukkamala17a-supp.pdf
http://proceedings.mlr.press/v70/munkhdalai17a/munkhdalai17a.pdf
http://proceedings.mlr.press/v70/munkhdalai17a/munkhdalai17a-supp.pdf
http://proceedings.mlr.press/v70/nagamine17a/nagamine17a.pdf
http://proceedings.mlr.press/v70/namkoong17a/namkoong17a.pdf
http://proceedings.mlr.press/v70/namkoong17a/namkoong17a-supp.pdf
http://proceedings.mlr.press/v70/neil17a/neil17a.pdf
http://proceedings.mlr.press/v70/neiswanger17a/neiswanger17a.pdf
http://proceedings.mlr.press/v70/neiswanger17a/neiswanger17a-supp.pdf
http://proceedings.mlr.press/v70/nguyen17a/nguyen17a.pdf
```

```
http://proceedings.mlr.press/v70/nguyen17a/nguyen17a-supp.pdf
http://proceedings.mlr.press/v70/nguyen17b/nguyen17b.pdf
http://proceedings.mlr.press/v70/nguyen17b/nguyen17b-supp.pdf
http://proceedings.mlr.press/v70/ni17a/ni17a.pdf
http://proceedings.mlr.press/v70/ochiai17a/ochiai17a.pdf
http://proceedings.mlr.press/v70/odena17a/odena17a.pdf
http://proceedings.mlr.press/v70/odena17a/odena17a-supp.pdf
http://proceedings.mlr.press/v70/oglic17a/oglic17a.pdf
http://proceedings.mlr.press/v70/oglic17a/oglic17a-supp.pdf
http://proceedings.mlr.press/v70/oh17a/oh17a.pdf
http://proceedings.mlr.press/v70/oh17a/oh17a-supp.pdf
http://proceedings.mlr.press/v70/oliva17a/oliva17a.pdf
http://proceedings.mlr.press/v70/omidshafiei17a/omidshafiei17a.pdf
http://proceedings.mlr.press/v70/omidshafiei17a/omidshafiei17a-supp.pdf
http://proceedings.mlr.press/v70/ongie17a/ongie17a.pdf
http://proceedings.mlr.press/v70/osband17a/osband17a.pdf
http://proceedings.mlr.press/v70/osband17a/osband17a-supp.pdf
http://proceedings.mlr.press/v70/osogami17a/osogami17a.pdf
http://proceedings.mlr.press/v70/osogami17a/osogami17a-supp.pdf
http://proceedings.mlr.press/v70/ostrovski17a/ostrovski17a.pdf
http://proceedings.mlr.press/v70/ostrovski17a/ostrovski17a-supp.pdf
http://proceedings.mlr.press/v70/pad17a/pad17a.pdf
http://proceedings.mlr.press/v70/pakman17a/pakman17a.pdf
http://proceedings.mlr.press/v70/pakman17a/pakman17a-supp.pdf
http://proceedings.mlr.press/v70/palla17a/palla17a.pdf
http://proceedings.mlr.press/v70/palla17a/palla17a-supp.pdf
http://proceedings.mlr.press/v70/pan17a/pan17a.pdf
http://proceedings.mlr.press/v70/panahi17a/panahi17a.pdf
http://proceedings.mlr.press/v70/panahi17a/panahi17a-supp.pdf
http://proceedings.mlr.press/v70/pathak17a/pathak17a.pdf
http://proceedings.mlr.press/v70/peng17a/peng17a.pdf
http://proceedings.mlr.press/v70/pennington17a/pennington17a.pdf
http://proceedings.mlr.press/v70/pennington17a/pennington17a-supp.pdf
http://proceedings.mlr.press/v70/pentina17a/pentina17a.pdf
http://proceedings.mlr.press/v70/pentina17a/pentina17a-supp.pdf
http://proceedings.mlr.press/v70/pinto17a/pinto17a.pdf
http://proceedings.mlr.press/v70/pritzel17a/pritzel17a.pdf
http://proceedings.mlr.press/v70/pritzel17a/pritzel17a-supp.pdf
http://proceedings.mlr.press/v70/raffel17a/raffel17a.pdf
http://proceedings.mlr.press/v70/raffel17a/raffel17a-supp.pdf
http://proceedings.mlr.press/v70/raghu17a/raghu17a.pdf
http://proceedings.mlr.press/v70/raghu17a/raghu17a-supp.pdf
http://proceedings.mlr.press/v70/raghunathan17a/raghunathan17a.pdf
http://proceedings.mlr.press/v70/raghunathan17a/raghunathan17a-supp.pdf
http://proceedings.mlr.press/v70/rahmani17a/rahmani17a.pdf
http://proceedings.mlr.press/v70/rahmani17b/rahmani17b.pdf
http://proceedings.mlr.press/v70/rana17a/rana17a.pdf
http://proceedings.mlr.press/v70/ravanbakhsh17a/ravanbakhsh17a.pdf
http://proceedings.mlr.press/v70/ravanbakhsh17a/ravanbakhsh17a-supp.pdf
http://proceedings.mlr.press/v70/real17a/real17a.pdf
http://proceedings.mlr.press/v70/real17a/real17a-supp.pdf
http://proceedings.mlr.press/v70/reed17a/reed17a.pdf
http://proceedings.mlr.press/v70/rippel17a/rippel17a.pdf
http://proceedings.mlr.press/v70/rippel17a/rippel17a-supp.pdf
```

```
http://proceedings.mlr.press/v70/riquelme17a/riquelme17a.pdf
http://proceedings.mlr.press/v70/riquelme17a/riquelme17a-supp.pdf
http://proceedings.mlr.press/v70/ritter17a/ritter17a.pdf
http://proceedings.mlr.press/v70/rubinstein17a/rubinstein17a.pdf
http://proceedings.mlr.press/v70/ruggieri17a/ruggieri17a.pdf
http://proceedings.mlr.press/v70/rukat17a/rukat17a.pdf
http://proceedings.mlr.press/v70/rukat17a/rukat17a-supp.pdf
http://proceedings.mlr.press/v70/safran17a/safran17a.pdf
http://proceedings.mlr.press/v70/safran17a/safran17a-supp.pdf
http://proceedings.mlr.press/v70/saito17a/saito17a.pdf
http://proceedings.mlr.press/v70/saito17a/saito17a-supp.pdf
http://proceedings.mlr.press/v70/sakai17a/sakai17a.pdf
http://proceedings.mlr.press/v70/sakai17a/sakai17a-supp.pdf
http://proceedings.mlr.press/v70/sakr17a/sakr17a.pdf
http://proceedings.mlr.press/v70/sakr17a/sakr17a-supp.pdf
http://proceedings.mlr.press/v70/saxe17a/saxe17a.pdf
http://proceedings.mlr.press/v70/saxe17a/saxe17a-supp.pdf
http://proceedings.mlr.press/v70/scaman17a/scaman17a.pdf
http://proceedings.mlr.press/v70/scaman17a/scaman17a-supp.pdf
http://proceedings.mlr.press/v70/schlegel17a/schlegel17a.pdf
http://proceedings.mlr.press/v70/schlegel17a/schlegel17a-supp.pdf
http://proceedings.mlr.press/v70/selsam17a/selsam17a.pdf
http://proceedings.mlr.press/v70/sen17a/sen17a.pdf
http://proceedings.mlr.press/v70/sen17a/sen17a-supp.pdf
http://proceedings.mlr.press/v70/shalev-shwartz17a/shalev-shwartz17a.pdf
http://proceedings.mlr.press/v70/shalev-shwartz17a/shalev-shwartz17a-supp
.pdf
http://proceedings.mlr.press/v70/shalit17a/shalit17a.pdf
http://proceedings.mlr.press/v70/shalit17a/shalit17a-supp.pdf
http://proceedings.mlr.press/v70/shamir17a/shamir17a.pdf
http://proceedings.mlr.press/v70/shamir17a/shamir17a-supp.pdf
http://proceedings.mlr.press/v70/sharan17a/sharan17a.pdf
http://proceedings.mlr.press/v70/sharan17a/sharan17a-supp.pdf
http://proceedings.mlr.press/v70/sheffet17a/sheffet17a.pdf
http://proceedings.mlr.press/v70/sheffet17a/sheffet17a-supp.pdf
http://proceedings.mlr.press/v70/shen17a/shen17a.pdf
http://proceedings.mlr.press/v70/shen17a/shen17a-supp.pdf
http://proceedings.mlr.press/v70/shen17b/shen17b.pdf
http://proceedings.mlr.press/v70/shi17a/shi17a.pdf
http://proceedings.mlr.press/v70/shrikumar17a/shrikumar17a.pdf
http://proceedings.mlr.press/v70/shrikumar17a/shrikumar17a-supp.pdf
http://proceedings.mlr.press/v70/shrivastava17a/shrivastava17a.pdf
http://proceedings.mlr.press/v70/shrivastava17a/shrivastava17a-supp.pdf
http://proceedings.mlr.press/v70/shu17a/shu17a.pdf
http://proceedings.mlr.press/v70/shu17a/shu17a-supp.pdf
http://proceedings.mlr.press/v70/shyam17a/shyam17a.pdf
http://proceedings.mlr.press/v70/si17a/si17a.pdf
http://proceedings.mlr.press/v70/si17a/si17a-supp.pdf
http://proceedings.mlr.press/v70/silver17a/silver17a.pdf
http://proceedings.mlr.press/v70/silver17a/silver17a-supp.pdf
http://proceedings.mlr.press/v70/simsekli17a/simsekli17a.pdf
http://proceedings.mlr.press/v70/simsekli17a/simsekli17a-supp.pdf
http://proceedings.mlr.press/v70/singh17a/singh17a.pdf
http://proceedings.mlr.press/v70/singh17a/singh17a-supp.pdf
```

```
http://proceedings.mlr.press/v70/sivakumar17a/sivakumar17a.pdf
http://proceedings.mlr.press/v70/staib17a/staib17a.pdf
http://proceedings.mlr.press/v70/staib17a/staib17a-supp.pdf
http://proceedings.mlr.press/v70/stan17a/stan17a.pdf
http://proceedings.mlr.press/v70/stan17a/stan17a-supp.pdf
http://proceedings.mlr.press/v70/stich17a/stich17a.pdf
http://proceedings.mlr.press/v70/stich17a/stich17a-supp.pdf
http://proceedings.mlr.press/v70/suggala17a/suggala17a.pdf
http://proceedings.mlr.press/v70/suggala17a/suggala17a-supp.pdf
http://proceedings.mlr.press/v70/sugiyama17a/sugiyama17a.pdf
http://proceedings.mlr.press/v70/sun17a/sun17a.pdf
http://proceedings.mlr.press/v70/sun17a/sun17a-supp.pdf
http://proceedings.mlr.press/v70/sun17b/sun17b.pdf
http://proceedings.mlr.press/v70/sun17b/sun17b-supp.pdf
http://proceedings.mlr.press/v70/sun17c/sun17c.pdf
http://proceedings.mlr.press/v70/sun17d/sun17d.pdf
http://proceedings.mlr.press/v70/sun17d/sun17d-supp.pdf
http://proceedings.mlr.press/v70/sundararajan17a/sundararajan17a.pdf
http://proceedings.mlr.press/v70/suresh17a/suresh17a.pdf
http://proceedings.mlr.press/v70/suresh17a/suresh17a-supp.pdf
http://proceedings.mlr.press/v70/suzumura17a/suzumura17a.pdf
http://proceedings.mlr.press/v70/suzumura17a/suzumura17a-supp.pdf
http://proceedings.mlr.press/v70/taieb17a/taieb17a.pdf
http://proceedings.mlr.press/v70/taieb17a/taieb17a-supp.pdf
http://proceedings.mlr.press/v70/tan17a/tan17a.pdf
http://proceedings.mlr.press/v70/tandon17a/tandon17a.pdf
http://proceedings.mlr.press/v70/tandon17a/tandon17a-supp.pdf
http://proceedings.mlr.press/v70/tang17a/tang17a.pdf
http://proceedings.mlr.press/v70/tang17a/tang17a-supp.pdf
http://proceedings.mlr.press/v70/telgarsky17a/telgarsky17a.pdf
http://proceedings.mlr.press/v70/telgarsky17a/telgarsky17a-supp.pdf
http://proceedings.mlr.press/v70/thi17a/thi17a.pdf
http://proceedings.mlr.press/v70/tian17a/tian17a.pdf
http://proceedings.mlr.press/v70/tian17a/tian17a-supp.pdf
http://proceedings.mlr.press/v70/tokui17a/tokui17a.pdf
http://proceedings.mlr.press/v70/tokui17a/tokui17a-supp.pdf
http://proceedings.mlr.press/v70/tompson17a/tompson17a.pdf
http://proceedings.mlr.press/v70/tosatto17a/tosatto17a.pdf
http://proceedings.mlr.press/v70/tosatto17a/tosatto17a-supp.pdf
http://proceedings.mlr.press/v70/tosh17a/tosh17a.pdf
http://proceedings.mlr.press/v70/tripuraneni17a/tripuraneni17a.pdf
http://proceedings.mlr.press/v70/tripuraneni17a/tripuraneni17a-supp.pdf
http://proceedings.mlr.press/v70/trivedi17a/trivedi17a.pdf
http://proceedings.mlr.press/v70/trivedi17a/trivedi17a-supp.pdf
http://proceedings.mlr.press/v70/tsakiris17a/tsakiris17a.pdf
http://proceedings.mlr.press/v70/tu17a/tu17a.pdf
http://proceedings.mlr.press/v70/ubaru17a/ubaru17a.pdf
http://proceedings.mlr.press/v70/ubaru17a/ubaru17a-supp.pdf
http://proceedings.mlr.press/v70/umlauft17a/umlauft17a.pdf
http://proceedings.mlr.press/v70/urschel17a/urschel17a.pdf
http://proceedings.mlr.press/v70/valera17a/valera17a.pdf
http://proceedings.mlr.press/v70/vaswani17a/vaswani17a.pdf
http://proceedings.mlr.press/v70/vaswani17a/vaswani17a-supp.pdf
http://proceedings.mlr.press/v70/vezhnevets17a/vezhnevets17a.pdf
```

```
http://proceedings.mlr.press/v70/villacampa-calvo17a/villacampa-calvo17a.
pdf
http://proceedings.mlr.press/v70/villegas17a/villegas17a.pdf
http://proceedings.mlr.press/v70/villegas17a/villegas17a-supp.pdf
http://proceedings.mlr.press/v70/vorontsov17a/vorontsov17a.pdf
http://proceedings.mlr.press/v70/walder17a/walder17a.pdf
http://proceedings.mlr.press/v70/walder17a/walder17a-supp.pdf
http://proceedings.mlr.press/v70/wang17a/wang17a.pdf
http://proceedings.mlr.press/v70/wang17a/wang17a-supp.pdf
http://proceedings.mlr.press/v70/wang17b/wang17b.pdf
http://proceedings.mlr.press/v70/wang17b/wang17b-supp.pdf
http://proceedings.mlr.press/v70/wang17c/wang17c.pdf
http://proceedings.mlr.press/v70/wang17d/wang17d.pdf
http://proceedings.mlr.press/v70/wang17e/wang17e.pdf
http://proceedings.mlr.press/v70/wang17e/wang17e-supp.pdf
http://proceedings.mlr.press/v70/wang17f/wang17f.pdf
http://proceedings.mlr.press/v70/wang17f/wang17f-supp.pdf
http://proceedings.mlr.press/v70/wang17g/wang17g.pdf
http://proceedings.mlr.press/v70/wang17g/wang17g-supp.pdf
http://proceedings.mlr.press/v70/wang17h/wang17h.pdf
http://proceedings.mlr.press/v70/wang17h/wang17h-supp.pdf
http://proceedings.mlr.press/v70/wang17i/wang17i.pdf
http://proceedings.mlr.press/v70/wang17i/wang17i-supp.pdf
http://proceedings.mlr.press/v70/wang17j/wang17j.pdf
http://proceedings.mlr.press/v70/wang17k/wang17k.pdf
http://proceedings.mlr.press/v70/wang17k/wang17k-supp.pdf
http://proceedings.mlr.press/v70/wang17l/wang17l.pdf
http://proceedings.mlr.press/v70/wang17l/wang17l-supp.pdf
http://proceedings.mlr.press/v70/wang17m/wang17m.pdf
http://proceedings.mlr.press/v70/wang17n/wang17n.pdf
http://proceedings.mlr.press/v70/wang17n/wang17n-supp.pdf
http://proceedings.mlr.press/v70/wei17a/wei17a.pdf
http://proceedings.mlr.press/v70/wen17a/wen17a.pdf
http://proceedings.mlr.press/v70/white17a/white17a.pdf
http://proceedings.mlr.press/v70/white17a/white17a-supp.pdf
http://proceedings.mlr.press/v70/wichrowska17a/wichrowska17a.pdf
http://proceedings.mlr.press/v70/winner17a/winner17a.pdf
http://proceedings.mlr.press/v70/winner17a/winner17a-supp.pdf
http://proceedings.mlr.press/v70/wrigley17a/wrigley17a.pdf
http://proceedings.mlr.press/v70/wrigley17a/wrigley17a-supp.pdf
http://proceedings.mlr.press/v70/wu17a/wu17a.pdf
http://proceedings.mlr.press/v70/wu17a/wu17a-supp.pdf
http://proceedings.mlr.press/v70/xia17a/xia17a.pdf
http://proceedings.mlr.press/v70/xia17a/xia17a-supp.pdf
http://proceedings.mlr.press/v70/xie17a/xie17a.pdf
http://proceedings.mlr.press/v70/xie17b/xie17b.pdf
http://proceedings.mlr.press/v70/xie17b/xie17b-supp.pdf
http://proceedings.mlr.press/v70/xu17a/xu17a.pdf
http://proceedings.mlr.press/v70/xu17a/xu17a-supp.pdf
http://proceedings.mlr.press/v70/xu17b/xu17b.pdf
http://proceedings.mlr.press/v70/xu17b/xu17b-supp.pdf
http://proceedings.mlr.press/v70/xu17c/xu17c.pdf
http://proceedings.mlr.press/v70/xu17c/xu17c-supp.pdf
http://proceedings.mlr.press/v70/yang17a/yang17a.pdf
```

```
http://proceedings.mlr.press/v70/yang17b/yang17b.pdf
http://proceedings.mlr.press/v70/yang17b/yang17b-supp.pdf
http://proceedings.mlr.press/v70/yang17c/yang17c.pdf
http://proceedings.mlr.press/v70/yang17c/yang17c-supp.pdf
http://proceedings.mlr.press/v70/yang17d/yang17d.pdf
http://proceedings.mlr.press/v70/yang17d/yang17d-supp.pdf
http://proceedings.mlr.press/v70/yang17e/yang17e.pdf
http://proceedings.mlr.press/v70/yang17f/yang17f.pdf
http://proceedings.mlr.press/v70/yang17g/yang17g.pdf
http://proceedings.mlr.press/v70/yang17g/yang17g-supp.pdf
http://proceedings.mlr.press/v70/yang17h/yang17h.pdf
http://proceedings.mlr.press/v70/ye17a/ye17a.pdf
http://proceedings.mlr.press/v70/ye17a/ye17a-supp.pdf
http://proceedings.mlr.press/v70/ye17b/ye17b.pdf
http://proceedings.mlr.press/v70/ye17b/ye17b-supp.pdf
http://proceedings.mlr.press/v70/yen17a/yen17a.pdf
http://proceedings.mlr.press/v70/yen17a/yen17a-supp.pdf
http://proceedings.mlr.press/v70/yoon17a/yoon17a.pdf
http://proceedings.mlr.press/v70/zaheer17a/zaheer17a.pdf
http://proceedings.mlr.press/v70/zaheer17b/zaheer17b.pdf
http://proceedings.mlr.press/v70/zaheer17b/zaheer17b-supp.pdf
http://proceedings.mlr.press/v70/zenke17a/zenke17a.pdf
http://proceedings.mlr.press/v70/zenke17a/zenke17a-supp.pdf
http://proceedings.mlr.press/v70/zhang17a/zhang17a.pdf
http://proceedings.mlr.press/v70/zhang17b/zhang17b.pdf
http://proceedings.mlr.press/v70/zhang17c/zhang17c.pdf
http://proceedings.mlr.press/v70/zhang17c/zhang17c-supp.pdf
http://proceedings.mlr.press/v70/zhang17d/zhang17d.pdf
http://proceedings.mlr.press/v70/zhang17e/zhang17e.pdf
http://proceedings.mlr.press/v70/zhang17f/zhang17f.pdf
http://proceedings.mlr.press/v70/zhang17f/zhang17f-supp.pdf
http://proceedings.mlr.press/v70/zhang17g/zhang17g.pdf
http://proceedings.mlr.press/v70/zhang17g/zhang17g-supp.pdf
http://proceedings.mlr.press/v70/zhang17h/zhang17h.pdf
http://proceedings.mlr.press/v70/zhao17a/zhao17a.pdf
http://proceedings.mlr.press/v70/zhao17b/zhao17b.pdf
http://proceedings.mlr.press/v70/zhao17c/zhao17c.pdf
http://proceedings.mlr.press/v70/zhao17c/zhao17c-supp.pdf
http://proceedings.mlr.press/v70/zhao17d/zhao17d.pdf
http://proceedings.mlr.press/v70/zheng17a/zheng17a.pdf
http://proceedings.mlr.press/v70/zheng17a/zheng17a-supp.pdf
http://proceedings.mlr.press/v70/zheng17b/zheng17b.pdf
http://proceedings.mlr.press/v70/zheng17b/zheng17b-supp.pdf
http://proceedings.mlr.press/v70/zheng17c/zheng17c.pdf
http://proceedings.mlr.press/v70/zheng17c/zheng17c-supp.pdf
http://proceedings.mlr.press/v70/zhong17a/zhong17a.pdf
http://proceedings.mlr.press/v70/zhou17a/zhou17a.pdf
http://proceedings.mlr.press/v70/zhou17a/zhou17a-supp.pdf
http://proceedings.mlr.press/v70/zhou17b/zhou17b.pdf
http://proceedings.mlr.press/v70/zhou17b/zhou17b-supp.pdf
http://proceedings.mlr.press/v70/zhou17c/zhou17c.pdf
http://proceedings.mlr.press/v70/zhou17c/zhou17c-supp.pdf
http://proceedings.mlr.press/v70/zhu17a/zhu17a.pdf
http://proceedings.mlr.press/v70/zilly17a/zilly17a.pdf
```

```
http://proceedings.mlr.press/v70/zilly17a/zilly17a-supp.pdf
http://proceedings.mlr.press/v70/zoghi17a/zoghi17a.pdf
http://proceedings.mlr.press/v70/zoghi17a/zoghi17a-supp.pdf
```

In [6]:
```python
def info(pdf_path):
    # used get method to get the pdf file
    response = requests.get(pdf_path)

    # response.content generate binary code for
    # string function
    with io.BytesIO(response.content) as f:

        # initialized the pdf
        try:
            pdf = PdfFileReader(f, strict=False)
        except Exception:
            return ""
        # all info about pdf
        information = pdf.getDocumentInfo()
        number_of_pages = pdf.getNumPages()
        content = ""
        for page_number in range(number_of_pages):
            page = pdf.pages[page_number]
            content = content + page.extract_text()
        #print(page.extract_text())

    return content
```

In [7]:
```python
# Copying all the contents of these pdf files into pdf_content dict
j = 0
pdf_content = {}
for i in list_of_pdf:
    pdf_content[j] = info(i)
    j = j+1
```

```
Multiple definitions in dictionary at byte 0x1836 for key /ExtGState
Multiple definitions in dictionary at byte 0x220c for key /ExtGState
Multiple definitions in dictionary at byte 0x1938 for key /ExtGState
Multiple definitions in dictionary at byte 0x1eda for key /ExtGState
Multiple definitions in dictionary at byte 0x275d for key /ExtGState
Multiple definitions in dictionary at byte 0x53b for key /ExtGState
Multiple definitions in dictionary at byte 0x1203 for key /ExtGState
Multiple definitions in dictionary at byte 0x1c43 for key /ExtGState
Multiple definitions in dictionary at byte 0x418 for key /ExtGState
Multiple definitions in dictionary at byte 0x89f for key /ExtGState
Multiple definitions in dictionary at byte 0xf3b for key /ExtGState
Multiple definitions in dictionary at byte 0x1642 for key /ExtGState
Multiple definitions in dictionary at byte 0x1b60 for key /ExtGState
Multiple definitions in dictionary at byte 0x430 for key /ExtGState
Multiple definitions in dictionary at byte 0x9bc for key /ExtGState
Multiple definitions in dictionary at byte 0xe61 for key /ExtGState
Multiple definitions in dictionary at byte 0x121f for key /ExtGState
Multiple definitions in dictionary at byte 0x15ed for key /ExtGState
Multiple definitions in dictionary at byte 0x1c6d for key /ExtGState
Multiple definitions in dictionary at byte 0x1fdb for key /ExtGState
Multiple definitions in dictionary at byte 0x255a for key /ExtGState
Multiple definitions in dictionary at byte 0x3de for key /ExtGState
Multiple definitions in dictionary at byte 0xa45 for key /ExtGState
Multiple definitions in dictionary at byte 0xf54 for key /ExtGState
Multiple definitions in dictionary at byte 0x13c9 for key /ExtGState
Multiple definitions in dictionary at byte 0x186d for key /ExtGState
Multiple definitions in dictionary at byte 0x19f9 for key /ExtGState
Multiple definitions in dictionary at byte 0x1f15 for key /ExtGState
Multiple definitions in dictionary at byte 0x2251 for key /ExtGState
Multiple definitions in dictionary at byte 0x2d66 for key /ExtGState
Multiple definitions in dictionary at byte 0x5ba for key /ExtGState
Multiple definitions in dictionary at byte 0x9a2 for key /ExtGState
Multiple definitions in dictionary at byte 0xbf7 for key /ExtGState
Multiple definitions in dictionary at byte 0xef3 for key /ExtGState
Multiple definitions in dictionary at byte 0x10cd for key /ExtGState
Multiple definitions in dictionary at byte 0x1324 for key /ExtGState
Multiple definitions in dictionary at byte 0x1836 for key /ExtGState
Multiple definitions in dictionary at byte 0x220c for key /ExtGState
Multiple definitions in dictionary at byte 0x1938 for key /ExtGState
Multiple definitions in dictionary at byte 0x1eda for key /ExtGState
Multiple definitions in dictionary at byte 0x275d for key /ExtGState
Multiple definitions in dictionary at byte 0x53b for key /ExtGState
Multiple definitions in dictionary at byte 0x1203 for key /ExtGState
Multiple definitions in dictionary at byte 0x1c43 for key /ExtGState
Multiple definitions in dictionary at byte 0x42f for key /ExtGState
Multiple definitions in dictionary at byte 0x8b6 for key /ExtGState
```

In [23]:
```python
import matplotlib
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
import string

#Converting this pdf_content into a dataframe to perform some data cleani
pdf = pd.DataFrame(pdf_content.items(), columns=['id','content'])
pdf['content'] = pdf['content'].str.replace('[{}]'.format(string.punctuat
pdf['content'] = pdf['content'].str.encode("ascii", "ignore")
pdf['content'] = pdf['content'].str.decode("ascii")
pdf['content'] = pdf['content'].str.encode("utf-8", "ignore")
pdf['content'] = pdf['content'].str.decode("utf-8")
pdf = pdf.replace('\n',' ', regex=True)
pdf = pdf.replace('\d+',' ', regex=True)
```

```
/var/folders/gp/xs_xkf814zx898m2wdld0hw40000gn/T/ipykernel_25469/42364348
97.py:8: FutureWarning: The default value of regex will change from True
to False in a future version.
  pdf['content'] = pdf['content'].str.replace('[{}]'.format(string.punctu
ation), '')
```

In [24]:
```python
pdf.head(2)
```

Out[24]:

	id	content
0	0	The Loss Surface of Deep and Wide Neural Netwo...
1	1	GramCTC Automatic Unit Selection and Target De...

In [25]:
```python
#Writing this pdf content into a text file
with open("pdf_content.txt", 'a') as f:
    dfAsString = pdf.to_string(header=False, index=False)
    f.write(dfAsString)
```

In [56]:
```python
# Reading the text file back to perform some more pre-processing
import nltk
nltk.download('punkt')
raw = open('pdf_content.txt').read()
```

```
[nltk_data] Downloading package punkt to /Users/ri/nltk_data...
[nltk_data]   Package punkt is already up-to-date!
```

```
In [57]:  from nltk import pos_tag, word_tokenize, wordpunct_tokenize
          nltk.download('words')
          from nltk.corpus import words

          # Removing non english words from the pdfs
          def removeNonEnglishWordsFunct(x):
              words = set(nltk.corpus.words.words())
              filteredSentence = " ".join(w for w in nltk.word_tokenize(x) \
                                          if w.lower() in words)
              return filteredSentence

          fresh_data = removeNonEnglishWordsFunct(raw)
```

```
[nltk_data] Downloading package words to /Users/ri/nltk_data...
[nltk_data]   Package words is already up-to-date!
```

```
In [45]:  # Writing the content back to a sample file, which will be used further f
          text_file = open("sample.txt", "wt")
          n = text_file.write(fresh_data)
          text_file.close()
```

1. What are the top 10 common words in the ICML papers?

```
In [46]:  from nltk.probability import FreqDist

          raw = open('sample.txt').read()

          tokens = word_tokenize(raw)
          words = [w.lower() for w in tokens]

          # Finding the frequency of all words
          fdist = FreqDist(words)
          word_freq_df = pd.DataFrame(fdist.items(), columns=['word', 'frequency'])
```

```
In [47]:  # Printing the top 10 most common words — stopwords are not removed
          word_freq_df.sort_values(by='frequency', ascending=False).head(10)
```

Out[47]:

	word	frequency
0	the	205775
3	of	100241
5	and	74580
47	a	71322
16	in	67867
34	to	62905
39	we	50858
46	for	47449
13	is	44338
18	that	35409

2. Let Z be a randomly selected word in a randomly selected ICML paper. Estimate the entropy of Z.

In [48]:
```python
# Entropy or H is the minimum no of bits that are needed to be sent acros
# H = - sum ((probability of i) * log (probability of i))
import math
# total number of words
total_words = word_freq_df["frequency"].sum()
word_freq_df["per_word"] = word_freq_df["frequency"]/total_words

word_freq_df["log_entropy"] = word_freq_df["per_word"].map(lambda x: math
word_freq_df["entropy"] = word_freq_df["per_word"] * word_freq_df["log_en
```

In [59]:
```python
total_entropy = -1 * word_freq_df["entropy"].sum()
# Priting the entropy value
print("The entropy value of Z is ", total_entropy)
```

```
The entropy value of Z is  8.896772673091544
```

3. Synthesize a random paragraph using the marginal distribution over words.

In [50]:
```python
para = np.random.choice(word_freq_df["word"], 100, p=word_freq_df["per_wo
full_para = ' '.join([str(elem) for elem in para])
full_para
```

Out[50]:   'or in our in achieve conference estimator a share xi while b is with of
            s test for result two handle greedy we it a substance any per j to operat
            or the and the thus of by plane as of provided noise many that yang g lea
            rning al target of regression state sense also mathematical and propose p
            rior sense state learning algorithm extended not particular and it stocha
            stic that the the early of and as appendix sub randomly of gradient in ro
            bust me problem an our result learn is with paired convex forb loss appro
            ach task optimization the the and'

4. (Extra credit) Synthesize a random paragraph using an n-gram model on words. Synthesize a random paragraph using any model you want.

In [60]:
```python
text_file = open ("sample.txt","r",encoding="utf-8")
pdf_text = text_file.read()
text_file.close()
```

In [65]:
```python
#Creating the ngram dictionary
ngrams = {}
#Our n is 3 here
pair_words = 3

# Tokenize all the words in the sample
words_tokens = nltk.word_tokenize(pdf_text)

# 3 words are used as key and value consists of all words that are most l
for i in range(len(words_tokens)-pair_words):
    seq = ' '.join(words_tokens[i:i+pair_words])
    if  seq not in ngrams.keys():
        ngrams[seq] = []
    ngrams[seq].append(words_tokens[i+pair_words])
```

```python
In [69]:   import random

           # Randomly generate a Paragraph by taking random words as first pair
           number= random.randint(1,len(words_tokens)-pair_words)

           first_pair = ' '.join(words_tokens[number:number+pair_words])
           para = first_pair

           for i in range(150):
               # Check if this pair is a key
               if first_pair not in ngrams.keys():
                   break
               #If yes then take the value of this key
               list_of_words = ngrams[first_pair]
               # Randomly pick the next words
               nxt_words = list_of_words[random.randrange(len(list_of_words))]
               para += ' ' + nxt_words
               seq_words = nltk.word_tokenize(para)
               # Repeat this process with a new set of random pairs
               first_pair = ' '.join(seq_words[len(seq_words)-pair_words:len(seq_wor

           print(para,"\n")
```

much of an issue as such are unlikely to occur in parallel As a remedy we
introduce the Schema Network and robust generalization beyond these Deep
Related Work The recent empirical success of about the here are qualitati
ve due to that m By the union bound in similar respectively h hi T T wher
e varied depending on C following with least n C Remark us a density leve
l set clustering In th Annual Conference on Learning Theory COLT Benjamin
D and e Global in ten factorization deep learning and demonstrate that op
timization algorithm good L Bonsai was shown to be universal capable of a
rbitrarily complex given capacity al Furthermore recent work shown that c
an preserve of the problem When is used as the context vector into two ti
The t are at every step The dissipation inequality that the dynamics are
the same used in the algorithm Since are chosen as the class

```
In [ ]:
```