```
f0004:


W_Fdic:
the                  : 57      and                : 46      to              : 28      of                    : 28
is                   : 15      an                 : 15      on              : 13      -lsb-                 : 13
-rsb-                : 13      semantics          : 11      in              : 11      knowledge             : 10
with                 : 10      semantic           : 9       paper           : 8       web                   : 8
computing            : 8       social             : 7       from            : 7       data                  : 7
are                  : 7       for                : 7       network         : 6       space                 : 6
research             : 6       services           : 6       approach        : 6       be                    : 5
this                 : 5       can                : 5       its             : 5       into                  : 5
that                 : 5       conference         : 5       big             : 5       grids                 : 5
by                   : 5       introduces         : 5       link            : 5       issue                 : 4
cloud                : 4       representation     : 4       through         : 4       various               : 4
it                   : 4       document           : 4       human           : 4       advanced              : 4
represent            : 3       consists           : 3       discover        : 3       international          : 3
challenge            : 3       topic              : 3       mapping         : 3       fundamental           : 3
realize              : 3       cyberspace         : 3       society         : 3       special               : 3
approaches           : 3       documents          : 3       which           : 3       online                : 3
based                : 3       new                : 3       areas           : 3       including             : 3
humans               : 3       techniques         : 3       artificial      : 3       cyber-infrastructure  : 3
relevant             : 3       different          : 3       geographical    : 3       events                : 3
development          : 3       application        : 3       world           : 3       all                   : 2
discovering          : 2       will               : 2       cyber-physical  : 2       suitable              : 2
classification       : 2       only               : 2       process         : 2       more                  : 2
work                 : 2       stream             : 2       information     : 2       service-based         : 2
map                  : 2       applications       : 2       years           : 2       better                : 2
clusters             : 2       not                : 2       association     : 2       challenges            : 2
measure              : 2       event              : 2       internet        : 2       language              : 2
management           : 2       service            : 2       system          : 2       10                    : 2
future               : 2       published          : 2       built           : 2       also                  : 2
significant          : 2       infrastructures    : 2       especially      : 2       networks              : 2
theme                : 2       intelligence       : 2       ability         : 2       interactive           : 2
create               : 2       -rrb-              : 2       three           : 2       modelling             : 2
understand           : 2       external           : 2       cross-area      : 2       things                : 2
model                : 2       papers             : 2       grid            : 2       like                  : 2
recommendation       : 2       limitations        : 2       ontology        : 2       eight                 : 2
image                : 2       appropriate        : 2       textual         : 2       way                   : 2
but                  : 2       -lrb-              : 2       devices         : 2       as                    : 2
users                : 2       important          : 2       structure       : 2       limited               : 1
results              : 1       graph              : 1       environment     : 1       helps                 : 1
resources            : 1       every              : 1       vast            : 1       level                 : 1
solution             : 1       cyber              : 1       second          : 1       machines              : 1
selected             : 1       access             : 1       model-based     : 1       method                : 1
evolving             : 1       objects            : 1       along           : 1       forum                 : 1
formalizing          : 1       study              : 1       conveniently    : 1       emerge                : 1
buses                : 1       texts              : 1       tools           : 1       conventional          : 1
refers               : 1       live               : 1       vehicle         : 1       type                  : 1
annotations          : 1       sharing            : 1       benchmark       : 1       integrating           : 1
```

reviews	: 1	harmonious	: 1	9th	: 1	location-based	: 1
give	: 1	predict	: 1	share	: 1	sense	: 1
provide	: 1	algorithms	: 1	hot	: 1	fourth	: 1
classify	: 1	description	: 1	philosophy	: 1	tries	: 1
eighth	: 1	natural	: 1	third	: 1	keynotes	: 1
developed	: 1	over	: 1	mission	: 1	ieee	: 1
pervade	: 1	choose	: 1	constitutes	: 1	combination	: 1
views	: 1	outlined	: 1	processes	: 1	break	: 1
multidimensional	: 1	worlds	: 1	cognition	: 1	each	: 1
idea	: 1	related	: 1	extract	: 1	content	: 1
behaviours	: 1	offline	: 1	evaluation	: 1	seventh	: 1
interaction	: 1	could	: 1	computers	: 1	routes	: 1
first	: 1	features	: 1	render	: 1	well-known	: 1
open	: 1	surveys	: 1	meaningful	: 1	interact	: 1
gps	: 1	summarization	: 1	x.	: 1	than	: 1
11	: 1	12	: 1	effective	: 1	enables	: 1
mind	: 1	locations	: 1	generalization	: 1	have	: 1
studying	: 1	able	: 1	emphasis	: 1	concerns	: 1
build	: 1	finding	: 1	performance	: 1	strengths	: 1
deploy	: 1	most	: 1	connected	: 1	probabilistic	: 1
popularity	: 1	traditional	: 1	proceedings	: 1	reputation	: 1
velocity	: 1	quantity	: 1	text	: 1	planning	: 1
topically	: 1	fifth	: 1	achieve	: 1	ranking	: 1
evolution	: 1	querying	: 1	countries	: 1	public	: 1
sustainable	: 1	where	: 1	arrival	: 1	detection	: 1
professional	: 1	incorporating	: 1	routing	: 1	between	: 1
reading	: 1	discovery	: 1	available	: 1	infrastructure	: 1
nature	: 1	efficiency	: 1	distinguish	: 1	come	: 1
many	: 1	streams	: 1	invites	: 1	kernels	: 1
ensures	: 1	been	: 1	systems	: 1	self-organized	: 1
smartphones	: 1	developing	: 1	these	: 1	corpora	: 1
empirical	: 1	evaluated	: 1	aim	: 1	characteristics	: 1
experts	: 1	develop	: 1	used	: 1	reporting	: 1
levels	: 1	architectures	: 1	recent	: 1	analysis	: 1
sets	: 1	organization	: 1	sensing	: 1	proposed	: 1
previous	: 1	regarded	: 1	discuss	: 1	source	: 1
skg	: 1	internal	: 1	location	: 1	has	: 1
submissions	: 1	aspects	: 1	rules	: 1	deployment	: 1
harmoniously	: 1	effectiveness	: 1	necessary	: 1	facets	: 1
popular	: 1	because	: 1	people	: 1	some	: 1
platforms	: 1	economic	: 1	accelerate	: 1	indirect	: 1
measurements	: 1	select	: 1	provider	: 1	considering	: 1
sixth	: 1	processing	: 1	broker	: 1	comparison	: 1
introduced	: 1	or	: 1	clustering	: 1	networking	: 1
support	: 1	function	: 1	bus	: 1	becoming	: 1
differences	: 1	technologies	: 1	promote	: 1	ecosystem	: 1
co-evolve	: 1	heterogeneous	: 1	demonstrate	: 1	stages	: 1
year	: 1	influence	: 1	diverse	: 1	at	: 1
physical	: 1	virtual	: 1	field	: 1	compares	: 1

spatial	: 1	mathematics	: 1	explaining	: 1	collaborative	: 1
symbol	: 1	generated	: 1	requester	: 1	building	: 1
algorithm	: 1	time	: 1	cps	: 1		

WP_Fdic:

['the', 'DT']	: 57	['and', 'CC']	: 46	['of', 'IN']	: 28
['to', 'TO']	: 28	['an', 'DT']	: 15	['is', 'VBZ']	: 15
['on', 'IN']	: 13	['in', 'IN']	: 11	['with', 'IN']	: 10
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['paper', 'NN']	: 8	['from', 'IN']	: 7	['knowledge', 'NN']	: 7
['social', 'JJ']	: 7	['are', 'VBP']	: 7	['for', 'IN']	: 7
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['approach', 'NN']	: 6	['network', 'NN']	: 6	['can', 'MD']	: 5
['introduces', 'VBZ']	: 5	['data', 'NNS']	: 5	['be', 'VB']	: 5
['big', 'JJ']	: 5	['computing', 'NN']	: 5	['link', 'NN']	: 5
['by', 'IN']	: 5	['into', 'IN']	: 5	['-lsb-', 'VBG']	: 5
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['document', 'NN']	: 4	['issue', 'NN']	: 4	['cyberspace', 'NN']	: 3
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['based', 'VBN']	: 3	['artificial', 'JJ']	: 3	['world', 'NN']	: 3
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['consists', 'VBZ']	: 3	['new', 'JJ']	: 3	['cyber-infrastructure', 'NN']	: 3
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['challenge', 'NN']	: 3	['approaches', 'NNS']	: 3	['relevant', 'JJ']	: 3
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['will', 'MD']	: 2	['-lsb-', 'NNS']	: 2	['semantics', 'NNP']	: 2
['recommendation', 'NN']	: 2	['data', 'NN']	: 2	['-rrb-', '-RRB-']	: 2
['suitable', 'JJ']	: 2	['infrastructures', 'NNS']	: 2	['-rsb-', 'CD']	: 2
['stream', 'NN']	: 2	['intelligence', 'NN']	: 2	['structure', 'NN']	: 2
['international', 'NNP']	: 2	['built', 'VBN']	: 2	['important', 'JJ']	: 2
['appropriate', 'JJ']	: 2	['all', 'DT']	: 2	['service-based', 'JJ']	: 2
['event', 'NN']	: 2	['information', 'NN']	: 2	['interactive', 'JJ']	: 2
['internet', 'NN']	: 2	['devices', 'NNS']	: 2	['external', 'JJ']	: 2
['grids', 'NNP']	: 2	['classification', 'NN']	: 2	['cyber-physical', 'JJ']	: 2
['cross-area', 'JJ']	: 2	['published', 'VBN']	: 2	['significant', 'JJ']	: 2
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['understand', 'VB']	: 2	['association', 'NN']	: 2	['years', 'NNS']	: 2
['especially', 'RB']	: 2	['three', 'CD']	: 2	['different', 'JJ']	: 2
['also', 'RB']	: 2	['things', 'NNS']	: 2	['-lsb-', 'NN']	: 2

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['applications', 'NNS']	: 2	['modelling', 'VBG']	: 2	['create', 'VB']	: 2
['measure', 'VB']	: 2	['users', 'NNS']	: 2	['language', 'NN']	: 2
['web', 'NNP']	: 2	['image', 'NN']	: 2	['10', 'CD']	: 2
['limitations', 'NNS']	: 2	['represent', 'VB']	: 2	['-rsb-', 'JJ']	: 2
['that', 'IN']	: 2	['future', 'JJ']	: 2	['way', 'NN']	: 2
['challenges', 'NNS']	: 2	['not', 'RB']	: 2	['process', 'NN']	: 2
['eight', 'CD']	: 2	['networks', 'NNS']	: 2	['-lrb-', '-LRB-']	: 2
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['level', 'NN']	: 1	['previous', 'JJ']	: 1	['virtual', 'JJ']	: 1
['9th', 'JJ']	: 1	['support', 'VB']	: 1	['source', 'NN']	: 1
['cloud', 'NNP']	: 1	['rules', 'NNS']	: 1	['constitutes', 'VBZ']	: 1
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['economic', 'JJ']	: 1	['method', 'NN']	: 1	['conference', 'NNP']	: 1
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['idea', 'NN']	: 1	['routing', 'VBG']	: 1	['more', 'RBR']	: 1
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['more', 'JJR']	: 1	['building', 'VBG']	: 1	['incorporating', 'VBG']	: 1
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['between', 'IN']	: 1	['analysis', 'NN']	: 1	['considering', 'VBG']	: 1
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['developed', 'VBN']	: 1	['each', 'DT']	: 1	['able', 'JJ']	: 1

```
W_Pdic:
represent          : ['VBP', 'VB']        all            : ['DT']
semantic           : ['JJ']               limited        : ['VBN']
results            : ['NNS']              consists       : ['VBZ']
graph              : ['NN']               environment    : ['NN']
helps              : ['VBZ']              discovering    : ['VBG']
resources          : ['NNS']              every          : ['DT']
vast               : ['JJ']               level          : ['NN']
issue              : ['NN']               solution       : ['NN']
be                 : ['VB']               discover       : ['VB']
cyber              : ['NN']               second         : ['JJ']
machines           : ['NNS']              will           : ['MD']
selected           : ['VBD']              access         : ['NN']
international       : ['NNP', 'JJ']        model-based    : ['JJ']
method             : ['NN']               evolving       : ['JJ']
objects            : ['NNS']              cyber-physical : ['JJ']
along              : ['IN']               forum          : ['NN']
formalizing        : ['VBG']              study          : ['VB']
social             : ['JJ']               conveniently   : ['VB']
suitable           : ['JJ']               emerge         : ['VBP']
classification     : ['NN']               buses          : ['NNS']
texts              : ['NNS']              tools          : ['NNS']
cloud              : ['NN', 'NNP']        conventional   : ['JJ']
refers             : ['VBZ']              from           : ['IN']
to                 : ['TO']               only           : ['JJ', 'RB']
process            : ['NN']               live           : ['VB']
vehicle            : ['NN']               type           : ['NN']
annotations        : ['NNS']              more           : ['JJR', 'RBR']
sharing            : ['NN']               on             : ['IN']
benchmark          : ['JJ']               integrating    : ['VBG']
this               : ['DT']               challenge      : ['NN']
work               : ['NN', 'VB']         reviews        : ['VBZ']
harmonious         : ['JJ']               can            : ['MD']
9th                : ['JJ']               location-based : ['JJ']
stream             : ['NN']               give           : ['VB']
predict            : ['VB']               share          : ['NN']
topic              : ['NN']               sense          : ['VB']
information        : ['NN']               provide        : ['VB']
algorithms         : ['NNS']              service-based  : ['JJ']
hot                : ['JJ']               fourth         : ['JJ']
classify           : ['VB']               map            : ['VB', 'VBP']
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tries              : ['VBZ']              data           : ['NNS', 'NN']
eighth             : ['JJ']               natural        : ['JJ']
third              : ['JJ']               keynotes       : ['NNS']
fundamental        : ['JJ']               representation : ['NN']
developed          : ['VBN']              over           : ['IN']
mission            : ['NN']               years          : ['NNS']
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paper            : ['NN']                         through          : ['IN']
ieee             : ['NNP']                        its              : ['PRP$']
better           : ['JJR', 'RBR']                 pervade          : ['VBP']
choose           : ['VB']                         constitutes      : ['VBZ']
clusters         : ['NNS']                        into             : ['IN']
combination      : ['NN']                         views            : ['NNS']
outlined         : ['VBN']                        processes        : ['NNS']
break            : ['VB']                         not              : ['RB']
multidimensional : ['JJ']                         realize          : ['VB']
association      : ['NN']                          worlds           : ['NNS']
cognition        : ['NN']                         -lsb-            : ['VBG', 'CD', 'NNS', 'NN', 'NNP', 'VBZ']
each             : ['DT']                         cyberspace       : ['NN']
idea             : ['NN']                         related          : ['VBN']
challenges       : ['NNS']                        society          : ['NN']
measure          : ['VB']                         extract          : ['VB']
event            : ['NN']                         special          : ['JJ']
network          : ['NN']                         space            : ['NN']
research         : ['NN', 'NNP']                  content          : ['NN']
behaviours       : ['NNS']                        internet         : ['NN']
offline          : ['JJ']                         evaluation       : ['NN']
seventh          : ['JJ']                         approaches       : ['NNS']
interaction      : ['NN']                         language         : ['NN']
could            : ['MD']                         computers        : ['NNS']
routes           : ['NNS']                        first            : ['JJ']
features         : ['NNS']                        render           : ['VB']
well-known       : ['JJ']                         open             : ['JJ']
surveys          : ['VBZ']                        management       : ['NN']
service          : ['NN']                         meaningful       : ['JJ']
interact         : ['VB']                         system           : ['NN']
gps              : ['NNP']                         summarization    : ['NN']
x.               : ['NNP']                         that             : ['IN', 'WDT']
than             : ['IN']                         semantics        : ['NNS', 'NNP']
11               : ['CD']                         10               : ['CD']
12               : ['CD']                         effective        : ['JJ']
future           : ['JJ']                         enables          : ['VBZ']
published        : ['VBN']                         and              : ['CC']
mind             : ['NN']                         locations        : ['NNS']
generalization   : ['NN']                         have             : ['VBP']
documents        : ['NNS']                        built            : ['VBN']
studying         : ['VBG']                         able             : ['JJ']
also             : ['RB']                         emphasis         : ['NN']
concerns         : ['VBZ']                         build            : ['VB']
which            : ['WDT']                         online           : ['JJ']
finding          : ['VBG']                         performance      : ['NN']
strengths        : ['NNS']                         deploy           : ['VB']
most             : ['RBS']                         connected        : ['JJ']
significant      : ['JJ']                         services         : ['NNS']
infrastructures  : ['NNS']                         probabilistic    : ['JJ']
the              : ['DT']                         especially       : ['RB']
```

popularity	: ['NN']	traditional	: ['JJ']
proceedings	: ['NNS']	reputation	: ['NN']
velocity	: ['NN']	quantity	: ['NN']
text	: ['NN']	planning	: ['VBG']
topically	: ['RB']	networks	: ['NNS']
fifth	: ['JJ']	based	: ['VBN']
knowledge	: ['NN', 'NNP']	theme	: ['NN']
achieve	: ['VB']	ranking	: ['JJ']
new	: ['JJ']	areas	: ['NNS']
evolution	: ['NN']	querying	: ['VBG']
countries	: ['NNS']	public	: ['JJ']
sustainable	: ['JJ']	including	: ['VBG']
where	: ['WRB']	arrival	: ['NN']
intelligence	: ['NN']	humans	: ['NNS']
detection	: ['NN']	professional	: ['JJ']
are	: ['VBP']	-rsb-	: ['CD', 'NNS', 'JJ', 'NNP']
incorporating	: ['VBG']	techniques	: ['NNS']
artificial	: ['JJ']	various	: ['JJ']
routing	: ['VBG']	between	: ['IN']
reading	: ['VBG']	approach	: ['NN']
discovery	: ['NN']	available	: ['JJ']
infrastructure	: ['NN']	ability	: ['NN']
nature	: ['NN']	efficiency	: ['NN']
distinguish	: ['VB']	come	: ['VBP']
many	: ['JJ']	streams	: ['NNS']
cyber-infrastructure: ['NN']		interactive	: ['JJ']
invites	: ['VBZ']	relevant	: ['JJ']
conference	: ['NN', 'NNP']	kernels	: ['NNS']
ensures	: ['VBZ']	create	: ['VB']
-rrb-	: ['-RRB-']	three	: ['CD']
been	: ['VBN']	systems	: ['NNS']
self-organized	: ['JJ']	modelling	: ['VBG']
understand	: ['VB']	external	: ['JJ']
smartphones	: ['NNS']	developing	: ['VBG']
these	: ['DT']	cross-area	: ['JJ']
corpora	: ['NN']	empirical	: ['JJ']
evaluated	: ['VBN']	aim	: ['NN']
characteristics	: ['NNS']	is	: ['VBZ']
it	: ['PRP']	experts	: ['NNS']
in	: ['IN']	different	: ['JJ', 'VBG']
develop	: ['VB']	things	: ['NNS']
geographical	: ['JJ']	document	: ['NN']
events	: ['NNS']	development	: ['NN']
used	: ['VBN']	reporting	: ['VBG']
levels	: ['NNS']	architectures	: ['NNS']
recent	: ['JJ']	analysis	: ['NN']
sets	: ['NNS']	organization	: ['NN']
model	: ['NN']	sensing	: ['VBG']
proposed	: ['VBN']	human	: ['NNP', 'JJ']

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previous        : ['JJ']                        web             : ['NN', 'NNP']
application     : ['NN']                        regarded        : ['VBN']
discuss         : ['VB']                        source          : ['NN']
skg             : ['NNP']                       internal        : ['JJ']
location        : ['NN']                        has             : ['VBZ']
submissions     : ['NNS']                       aspects         : ['NNS']
rules           : ['NNS']                       big             : ['JJ']
papers          : ['NNS']                       grid            : ['NN']
deployment      : ['NN']                        world           : ['NN']
advanced        : ['JJ']                        harmoniously    : ['RB']
effectiveness   : ['NN']                        necessary       : ['JJ']
like            : ['IN']                        facets          : ['NNS']
popular         : ['JJ']                        because         : ['RB']
grids           : ['NNS', 'NNP']                people          : ['NNS']
some            : ['DT']                        platforms       : ['NNS']
economic        : ['JJ']                        accelerate      : ['VB']
recommendation  : ['NN']                        indirect        : ['JJ']
for             : ['IN']                        measurements    : ['NNS']
select          : ['VB']                        provider        : ['NN']
limitations     : ['NNS']                       considering     : ['VBG']
sixth           : ['JJ']                        processing      : ['VBG']
broker          : ['NN']                        ontology        : ['NN', 'JJ']
by              : ['IN']                        comparison      : ['NN']
of              : ['IN']                        introduces      : ['VBZ']
eight           : ['CD']                        introduced      : ['VBN']
or              : ['CC']                        image           : ['NN']
appropriate     : ['JJ']                        clustering      : ['VBG']
networking      : ['NN']                        support         : ['VB']
textual         : ['JJ']                        way             : ['NN']
function        : ['NN']                        bus             : ['NN']
becoming        : ['VBG']                       differences     : ['NNS']
but             : ['CC']                         link            : ['NN']
-lrb-           : ['-LRB-']                      technologies    : ['NNS']
promote         : ['VB']                         with            : ['IN']
ecosystem       : ['NN']                         devices         : ['NNS']
co-evolve       : ['VBP']                        heterogeneous   : ['JJ']
demonstrate     : ['VBP']                        stages          : ['NNS']
computing       : ['NN', 'VBG']                  year            : ['NN']
influence       : ['NN']                         an              : ['DT']
as              : ['IN']                         diverse         : ['JJ']
at              : ['IN']                         physical        : ['JJ']
virtual         : ['JJ']                         field           : ['NN']
compares        : ['VBZ']                        spatial         : ['JJ']
mathematics     : ['NNS']                        explaining      : ['VBG']
users           : ['NNS']                        collaborative   : ['JJ']
symbol          : ['NN']                         generated       : ['VBD']
important       : ['JJ']                         requester       : ['NN']
structure       : ['NN']                         building        : ['VBG']
algorithm       : ['NN']                         time            : ['NN']
```

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cps                   : ['NNP']
```