Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського» Фізико-технічний інститут

КРИПТОГРАФІЯ

КОМП'ЮТЕРНИЙ ПРАКТИКУМ №1

Експериментальна оцінка ентропії на символ джерела відкритого тексту.

Виконав:

студент III курсу ФТІ

групи ФБ-95

Прохоренко Ярослав

Перевірила:

Селюх П.В.

Мета роботи: Засвоєння понять ентропії на символ джерела та його надлишковості, вивчення та порівняння різних моделей джерела відкритого тексту для наближеного визначення ентропії, набуття практичних навичок щодо оцінки ентропії на символ джерела.

Результати

Ентропія:

Entropy monograms with spaces - 4.408440887367498

Surplus monograms with spaces - 0.12607128169276272

Entropy monograms without spaces - 4.392071937250406

Surplus monograms without spaces - 0.12158561254991884

Entropy bigrams with spaces - 3.8167294698199736

Surplus bigrams with spaces - 0.24337207214384238

Entropy bigrams without spaces - 3.8505377603780717

Surplus bigrams without spaces - 0.22989244792438568

Монограми:

With spaces	Without spaces
c,0.05901044030867	c,0.0663265306122449
л,0.026781661370857923	л,0.03010204081632653
н,0.07535179300953246	н,0.08469387755102041
6,0.012256014525646845	6,0.013775510204081633
г,0.009986382206082615	г,0.011224489795918367
м,0.019518837948252384	м,0.02193877551020408
в,0.04176123467998184	в,0.04693877551020408
x,0.01044030866999546	x,0.01173469387755102
ь,0.01044030866999546	ь,0.01173469387755102
т,0.06218792555605992	т,0.06989795918367347
ю,0.004539264639128461	ю,0.00510204081632653
ш,0.006808896958692692	ш,0.007653061224489796
ч,0.013163867453472538	ч,0.01479591836734694
к,0.02541988197911938	к,0.02857142857142857
a,0.06354970494779846	a,0.07142857142857142
щ,0.006808896958692692	щ,0.007653061224489796
ж,0.004993191103041307	ж,0.005612244897959183
я,0.016795279164775308	я,0.018877551020408164
э,0.0031774852473899226	э,0.0035714285714285713
e,0.08896958692691784	e,0.1
3,0.014979573309123922	з,0.01683673469387755
p,0.03858374943259192	p,0.04336734693877551
ф,0.0022696323195642307	ф,0.002551020408163265
и,0.06945074897866546	и,0.07806122448979592
й,0.011802088061733999	й,0.013265306122448979
ы,0.021788470267816613	ы,0.024489795918367346

,0.11030413073082161	0,0.10816326530612246
o,0.09623241034952337	п,0.03316326530612245
п,0.029505220154335	д,0.026530612244897958
д,0.023604176123467997	у,0.015306122448979591
y,0.013617793917385384	ц,0.0066326530612244895
ц,0.005901044030866999	

Біграми

Without spaces
вс,0.001530612244897959
св,0.0020408163265306124
во,0.00816326530612245
ом,0.006122448979591836
мс,0.0010204081632653062
ст,0.026020408163265306
тр,0.0010204081632653062
pe,0.014285714285714285
ем,0.002551020408163265
мл,0.0005102040816326531
ле,0.0066326530612244895
ен,0.017346938775510204
ни,0.013775510204081633
ии,0.003061224489795918
ип,0.004591836734693878
по,0.015306122448979591
ов,0.011224489795918367
вы,0.003061224489795918
ыс,0.003061224489795918

вы,0.0027235587834770767	си,0.002551020408163265
ыс,0.0013617793917385383	ит,0.007653061224489796
си,0.0022696323195642307	ть,0.004081632653061225
ит,0.005901044030866999	ьк,0.001530612244897959
ть,0.003631411711302769	ка,0.00510204081632653
ь ,0.0040853381752156154	ач,0.003061224489795918
к,0.005447117566954153	че,0.007142857142857143
ка,0.004539264639128461	ec,0.01479591836734694
ач,0.0022696323195642307	тв,0.009183673469387756
че,0.006354970494779845	ож,0.002551020408163265
ec,0.009532455742169769	жи,0.0010204081632653062
тв,0.008170676350431231	из,0.00510204081632653
o ,0.013163867453472538	зн,0.002551020408163265
ж,0.00045392646391284613	ио,0.003061224489795918
жи,0.0009078529278256923	он,0.00510204081632653
из,0.0040853381752156154	за,0.007653061224489796
зн,0.0022696323195642307	a6,0.004081632653061225
0,0.007262823422605538	бы,0.0035714285714285713
он,0.0040853381752156154	ыв,0.00510204081632653
3,0.0031774852473899226	ва,0.007142857142857143
за,0.006808896958692692	аю,0.001530612244897959
аб,0.0027235587834770767	ют,0.0010204081632653062
бы,0.0031774852473899226	тч,0.0010204081632653062
ыв,0.003631411711302769	чт,0.004591836734693878
ва,0.006354970494779845	то,0.012244897959183673

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й ,0.01044030866999546	бу,0.0005102040816326531
д,0.0022696323195642307	ye,0.003061224489795918
ея,0.0009078529278256923	ет,0.009183673469387756
ят,0.0013617793917385383	от,0.002551020408163265
те,0.008170676350431231	тн,0.004081632653061225
ьн,0.004993191103041307	на,0.012755102040816327
oc,0.014979573309123922	ac,0.00510204081632653
ти,0.012256014525646845	ca,0.003061224489795918
т,0.0031774852473899226	ал,0.0066326530612244895
e6,0.0009078529278256923	ли,0.0066326530612244895
бу,0.00045392646391284613	аф,0.0005102040816326531
ye,0.0027235587834770767	фо,0.0010204081632653062
ет,0.008170676350431231	рм,0.0010204081632653062
от,0.0022696323195642307	мв,0.0005102040816326531
на,0.011348161597821153	оз,0.005612244897959183
ac,0.003631411711302769	зд,0.0010204081632653062
c ,0.0018157058556513845	ей,0.004081632653061225
a,0.0022696323195642307	йс,0.0020408163265306124
ал,0.005901044030866999	ви,0.004081632653061225
ли,0.005901044030866999	ия,0.007142857142857143
a ,0.007262823422605538	яс,0.0020408163265306124
ф,0.00045392646391284613	cy,0.004081632653061225
фо,0.0009078529278256923	уч,0.002551020408163265
рм,0.0009078529278256923	сл,0.0035714285714285713
в,0.008170676350431231	ло,0.0020408163265306124

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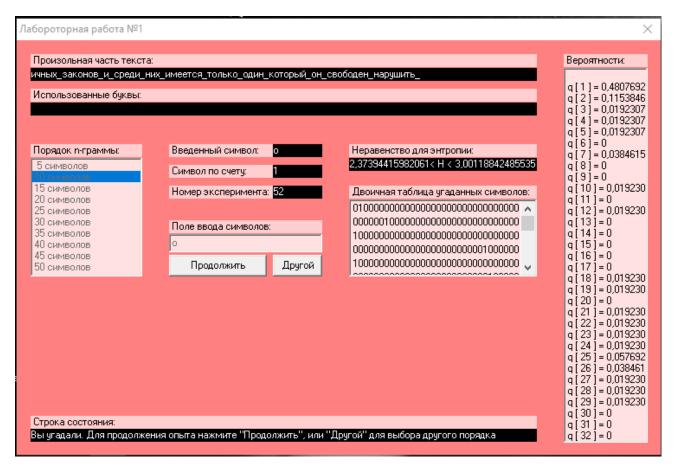
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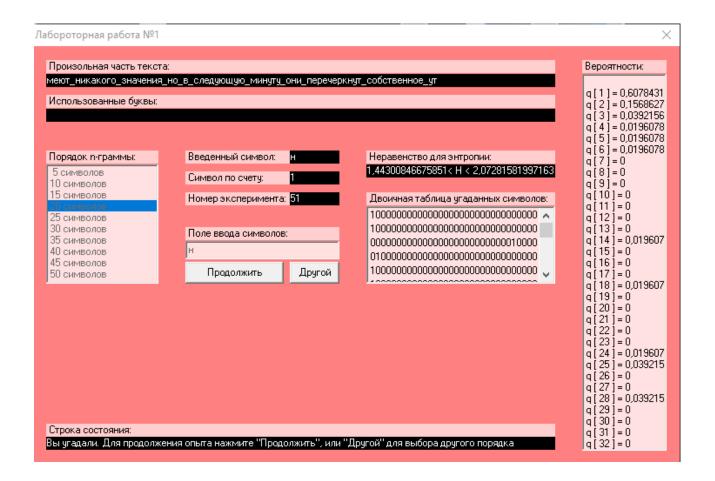
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яв,0.00045392646391284613	ях,0.0005102040816326531

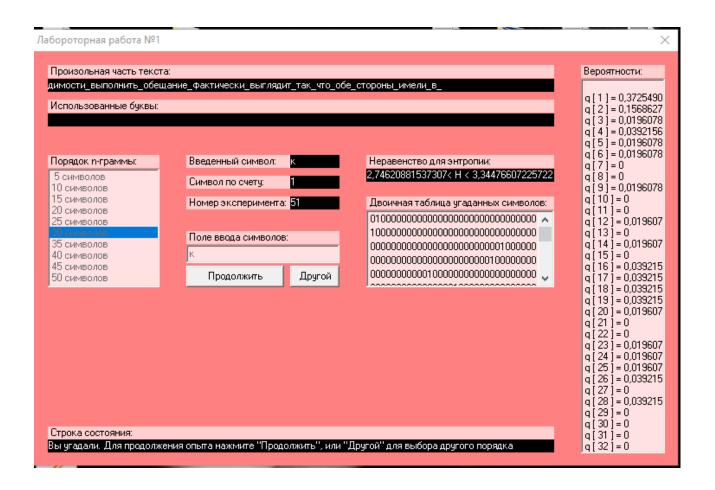
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ищ,0.00045392646391284613	йм,0.0005102040816326531
x,0.00045392646391284613	сш,0.0005102040816326531
ну,0.00045392646391284613	шт,0.0005102040816326531
ьз,0.00045392646391284613	иг,0.0005102040816326531
зу,0.00045392646391284613	нд,0.001530612244897959
у ,0.00045392646391284613	дг,0.0005102040816326531
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	рт,0.0005102040816326531
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0,5252111682 > R > 0,3997624



0,7113983068 > R > 0,585436838



0,450758238 > R > 0,34476607

Висновки: під час лабораторної роботи, я ознайомився з означеннями етропії та надлишковості тексту. Підрахував значення для монограм та біграм, визначив їх ентропію