Machine Learning Approaches to the Blockchain

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Acknowledgements

Abstract

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List of Abbreviations

CDMA Code Division Multiple Access							
GSM Global System for Mobile communication	. 2						
TDMA Time Division Multiple Access	. 2						
UA Used Acronym	.2						

Chapter 1

Introduction

Note that you may have multiple \include statements here, e.g. one for each subsection.

1.1 Motivation

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

1.2 Proposed Solution

1.2.1 Showing the Use of Acronyms

In the early nineties, GSM was deployed in many European countries. Global System for Mobile communication (GSM) offered for the first time international roaming for mobile subscribers. The GSM's use of Time Division Multiple Access (TDMA) as its communication standard was debated at length. And every now and then there are big discussion whether Code Division Multiple Access (CDMA) should have been chosen over TDMA.

If you want to know more about Global System for Mobile communication (GSM), Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA) and other acronyms, just read a book about mobile communication. Just to mention it: There is another Used Acronym (UA), for testing.

1.3 Document Structure

Chapter 2

Background & Literature Overview

In this section you need to explain all the theory required to understand your dissertation (i.e. the following chapters). But really in this chapter I am going to show you some examples.

2.1 An Example of an Equation

The following is the most beautiful equation in maths, Euler's Identity (Equation 2.1).

$$e^{i\pi} + 1 = 0 (2.1)$$

where:

e =the constant

i = of complex fame

 $\pi = \text{not of the apple variety}$

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected

font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

2.2 An Example of a Numbered List

This is an example of a numbered list:

- 1. This is my first point
- 2. My second
- 3. My third!
- 4. And my fourth?

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

2.3 An Example of a Bulleted List

This is an example of a bulleted list:

- This is my first point
- My second
- My third!
- · And my fourth?

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected

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2.4 An Example of a Figure

A test figure is shown in Figure 2.1.



Figure 2.1: A test figure. This caption is huge, but in the list of figures only the smaller version in the square brackets will appear.

2.5 An Example of a Side-by-Side Figure

Two figures shown side-by-side are shown in Figure 2.2.



Figure 2.2: The same super saiyan. Two times.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

2.6 An Example of a Table

A beautiful table is shown in Table 2.1, data from Ebejer et al. (2012) (when citing as part of text, otherwise use parentheses (Ebejer et al., 2012) version).

100.2497

141.2778

-259.7326

		w = 8					
	t = 0	t = 1	t = 2	_	t = 0	t = 1	t=2
dir = 1							
С	0.0790	0.1692	0.2945		0.3670	0.7187	3.1815
С	-0.8651	50.0476	5.9384		-9.0714	297.0923	46.2143
С	124.2756	-50.9612	-14.2721		128.2265	-630.5455	-381.0930
dir = 0							
С	0.0357	1.2473	0.2119		0.3593	-0.2755	2.1764
С	-17.9048	-37.1111	8.8591		-30.7381	-9.5952	-3.0000

Table 2.1: A Beautiful and Complex Table (for tables captions above)

2.7 An Example of a Long Table

105.5518 232.1160 -94.7351

The following is an example of a table (Table 2.2) spanning multiple pages.

Table 2.2: Performance of Ligity in HTS mode against the Ligity-compatible DUD-E targets. The mean (and standard deviation in parentheses) values of ROC AUC using Tanimoto is 0.622 (± 0.132), while for Tversky it is 0.671 (± 0.142); the mean EF_{1%} using Tanimoto is 5.648 (± 8.668), while for EF_{1%} using Tversky it is 9.047 (± 12.713).

Target	No.	No.	ROC	ROC	BEDROC	BEDRO	C EF _{1%}	EF _{1%}
	of	of	AUC	AUC	Tani-	Tver-	Tani-	Tversky
	Ac-	De-	Tani-	Tver-	moto	sky	moto	
	tives	coys	moto	sky				
ABL1	182	10,750	0.563	0.473	0.077	0.077	1.653	2.204
ACE	281	16,877	0.787	0.787	0.336	0.401	12.425	19.525
ACES	453	26,242	0.634	0.645	0.077	0.155	1.766	5.518
ADA	93	5,450	0.724	0.660	0.149	0.147	3.251	3.251
ADA17	532	35,898	0.638	0.728	0.103	0.283	1.317	9.030
ADRB1	247	15,850	0.523	0.647	0.065	0.129	1.619	5.262
ADRB2	231	14,999	0.523	0.589	0.052	0.040	1.735	0.000
AKT1	293	16,450	0.386	0.548	0.039	0.107	2.737	3.080
AKT2	117	6,900	0.511	0.685	0.140	0.194	8.568	8.568
ALDR	159	8,988	0.574	0.610	0.202	0.172	10.747	6.322
AMPC	48	2,845	0.521	0.541	0.049	0.023	0.000	0.000
ANDR	269	14,349	0.722	0.742	0.194	0.354	4.839	24.938

(continued...)

(continued...)

CHAPTER 2. BACKGROUND & LITERATURE OVERVIEW

Target	get No. No.		ROC	ROC	BEDROC	BEDROC	EF _{1%}	EF _{1%}
	of	of	AUC	AUC	Tani-	Tver-	Tani-	Tver-
	Ac-	De-	Tani-	Tver-	moto	sky	moto	sky
	tives	coys	moto	sky				
LCK	419	27,391	0.471	0.437	0.031	0.043	0.000	1.910
LKHA4 MAPK2	171 101	9,448 6,148	0.718 0.660	0.694 0.670	0.238 0.174	0.150 0.199	8.203 5.988	1.758 3.992
MCR	94	5,149	0.816	0.888	0.215	0.454	6.436	19.307
MET	166	11,249	0.566	0.531	0.130	0.065	6.032	0.603
MK01	79	4,550	0.518	0.602	0.121	0.206	5.095	3.821
MK10 MK14	104 578	6,600 35,847	0.488 0.511	0.489 0.589	0.020 0.040	0.031 0.064	0.962 0.173	0.962 0.519
MMP13	572	37,199	0.648	0.753	0.134	0.268	2.446	9.957
MP2K1	121	8,146	0.669	0.569	0.187	0.058	3.293	0.823
NOS1	98	8,028	0.483	0.451	0.109	0.041	3.071	0.000
NRAM	98 99	6,200	0.853	0.859	0.342	0.290	11.221	3.060
PA2GA PARP1	508	5,150 30,029	0.793 0.635	0.756 0.692	0.225 0.215	0.153 0.231	1.020 11.234	3.059 7.884
PGH1	195	10,798	0.645	0.637	0.213	0.100	0.000	2.050
PGH2	435	23,139	0.716	0.780	0.166	0.291	3.444	9.874
PLK1	107	6,800	0.658	0.531	0.123	0.048	1.871	0.000
PNPH PPARA	103 373	6,946 19,399	0.575 0.783	0.578 0.778	0.161 0.262	0.181 0.280	4.888 6.693	8.799 7.764
PPARD	240	12,250	0.763	0.778	0.202	0.280	1.665	2.498
PPARG	484	25,299	0.515	0.605	0.055	0.118	0.619	4.955
PRGR	293	15,648	0.740	0.793	0.142	0.318	2.053	14.714
PTN1	130	7,249	0.398	0.538	0.055	0.090	0.000	3.068
PUR2 PYGM	50 77	2,700 3,944	0.851 0.403	0.837 0.492	0.281 0.016	0.255 0.137	7.857 0.000	1.964 3.917
PYRD	111	6,449	0.682	0.710	0.462	0.413	34.027	16.118
RENI	104	6,956	0.720	0.789	0.043	0.138	0.000	0.000
ROCK1	100	6,300	0.347	0.449	0.020	0.084	1.000	4.000
RXRA	131	6,950	0.788	0.900	0.219	0.596	6.091	27.407
SAHH SRC	63 524	3,450 34,500	0.874 0.565	0.852 0.477	0.598 0.065	0.542 0.050	35.050 0.382	27.084 0.573
TGFR1	133	8,499	0.609	0.639	0.147	0.154	10.565	4.528
THB	103	7,450	0.794	0.762	0.238	0.150	10.614	0.965
THRB	461	27,000	0.605	0.706	0.063	0.166	2.166	5.632
TRY1 TRYB1	449 148	25,975 7,650	0.711 0.670	0.815 0.670	0.147 0.153	0.280 0.132	2.898 3.378	6.688 3.378
TYSY	109	6,745	0.574	0.870	0.133	0.132	0.911	5.468
UROK	162	9,850	0.525	0.650	0.036	0.120	0.000	1.854
VGFR2	409	24,948	0.632	0.578	0.083	0.093	1.465	1.465
WEE1	102	6,150	0.934	0.929	0.789	0.797	59.348	61.294
XIAP	100	5,150	0.752	0.974	0.190	0.897	8.077	51.490

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2.8 A Landscape Table Example

Next is an example of a wide table on a landscape oriented paper (Table 2.3).

Table 2.3: A table in landscape orientation.

m	x	у	z	а	A_m	В	С	x	у	z	а	A_m	В	С
1	16.128	+8.872	16.128	1.402	1.373	-146.6	-137.6	16.128	+8.872	16.128	1.402	1.373	-146.6	-137.6
2	3.442	-2.509	3.442	0.299	0.343	133.2	152.4	3.442	-2.509	3.442	0.299	0.343	133.2	152.4
3	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
4	0.993	-0.429	0.993	0.086	0.08	25.6	90	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
5	1.29	+0.099	1.29	0.112	0.097	-175.6	-114.7	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
6	0.483	-0.183	0.483	0.042	0.063	22.3	122.5	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
7	0.766	-0.475	0.766	0.067	0.039	141.6	-122	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
8	0.624	+0.365	0.624	0.054	0.04	-35.7	90	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
9	0.641	-0.466	0.641	0.056	0.045	133.3	-106.3	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
10	0.45	+0.421	0.45	0.039	0.034	-69.4	110.9	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1
11	0.598	-0.597	0.598	0.052	0.025	92.3	-109.3	1.826	-0.363	1.826	0.159	0.119	168.5	-161.1

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2.9 A Theorem Example

Theorem 1. Let f be a function whose derivative exists in every point, then f is a continuous function.

Theorem 2 (Pythagorean theorem). This is a theorem about right triangles and can be summarised in the next equation

$$x^2 + y^2 = z^2$$

And a consequence of Theorem 2 is the statement in the next corollary.

Corollary 1. There's no right rectangle whose sides measure 3 cm, 4 cm, and 6 cm.

You can reference theorems such as 2 when a label is assigned.

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2.10 A Lemma Example

Lemma 1. Given two line segments whose lengths are a and b respectively there is a real number r such that b = ra.

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gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

2.11 A Proof Example

Lemma 2. Given two line segments whose lengths are a and b respectively there is a real number r such that b = ra.

<u>Proof:</u> To prove it by contradiction try and assume that the statement is false, proceed from there and at some point you will arrive to a contradiction.

2.12 A Listing Example

```
1 import numpy as np
2
3 def incmatrix(genl1,genl2):
   m = len(genl1)
    n = len(gen12)
    M = None #to become the incidence matrix
    VT = np.zeros((n*m,1), int) #dummy variable
8
9
    #compute the bitwise xor matrix
10
    M1 = bitxormatrix(genl1)
11
    M2 = np.triu(bitxormatrix(genl2),1)
12
    for i in range (m-1):
13
     for j in range(i+1, m):
14
15
        [r,c] = np.where(M2 == M1[i,j])
16
        for k in range(len(r)):
         VT[(i)*n + r[k]] = 1;
17
18
          VT[(i)*n + c[k]] = 1;
19
          VT[(j)*n + r[k]] = 1;
          VT[(j)*n + c[k]] = 1;
20
21
22
          if M is None:
23
           M = np.copy(VT)
          else:
24
25
           M = np.concatenate((M, VT), 1)
27
          VT = np.zeros((n*m,1), int)
28
    return M
```

Listing 2.1: My Listing Caption

Algorithm 1 An algorithm with caption

```
Require: n \ge 0
Ensure: y = x^n
y \leftarrow 1
X \leftarrow x
N \leftarrow n
while N \ne 0 do
if N is even then
X \leftarrow X \times X
N \leftarrow \frac{N}{2}
else if N is odd then
y \leftarrow y \times X
N \leftarrow N - 1
end if
end while
```

2.13 An Algorithm Example

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

2.14 Some Technique One

2.14.1 Some Sub-technique One

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

2.14.1.1 Some Sub-sub-technique One

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2.15 Some Technique Two with Super Long Title Which Will Overrun In Header

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Imagine some colourful description on Some Technique Three.

2.16 Evaluation Criteria

This section should contain information on the metrics and background used to evaluate your work.

2.17 Related Work

In this section you need to explain (and reference) similar work in literature. Make sure to:

- Give a systematic overview of papers with related/similar work
- Highlight similarities/differences to your work (perhaps in the form of a table)

For references use IEEE style (IEEE Ref. Guide) or Harvard style (Harvard Ref. Guide). Note that this section may be sectioned based on the different aspects of your dissertation. Some referenced text, as an example (Arrighi, 2003; Ebejer et al., 2016; Withers-Martinez et al., 2012).

2.18 An Example of Suppressing Page Numbers on A Float Page

Refer to Figure 2.3.

2.19 Summary



Figure 2.3: Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Chapter 3

Materials & Methods

This section should include a recipe of what you did (explain what you have done so if someone wants to reproduce the experiment, they can). A flow chart is typically helpful. Also, make sure to define all software that you used including version numbers and OS. Should also include a description of statistical methods used (if any).¹

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3.1 Summary

¹For more information see: http://rc.rcjournal.com/content/49/10/1229.short

Chapter 4

Results & Discussion

Should include a reiteration of the experiments, and their outcome. Together with a description (discussion). Preamble should include a reminder of the aims and objectives together with a list of experiments to achieve these. Should include many charts and other visualization with appropriate descriptions.

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4.1 Summary

Chapter 5

Evaluation

In an ideal world, you should have two kind of evaluations. The first is against some ground truth (perhaps a random model?). The second kind of evaluation is against other people's work (accuracy, speed, etc.). Any dimension which is of interest, should be evaluated. Evaluation should be statistically sound.

This is the second paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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5.1 Summary

Chapter 6

Conclusions

This section should have a summary of the whole project. The original aims and objective and whether these have been met should be discussed. It should include a section with a critique and a list of limitations of your proposed solutions. Future work should be described, and this should not be marginal or silly (e.g. add machine learning models). It is always good to end on a positive note (i.e. 'Final Remarks').

6.1 Revisiting the Aims and Objectives

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

6.2 Critique and Limitations

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6.3 Future Work

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6.4 Final Remarks

References

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- Ebejer, J.-P., Morris, G. M., and Deane, C. M. Freely available conformer generation methods: How good are they? *J. Chem. Inf. Model.*, 52(5):1146–1158, 2012.
- Ebejer, J.-P., Charlton, M. H., and Finn, P. W. Are the physicochemical properties of antibacterial compounds really different from other drugs? *Journal of Cheminformatics*, 8(1), 2016.
- Harvard Ref. Guide. Harvard References Style. https://www.um.edu.mt/__data/assets/pdf_file/0007/353662/Harvard_Guide.pdf. Last Accessed: March 18th, 2022.
- **IEEE Ref. Guide. IEEE References Style.** https://ieeeauthorcenter.ieee.org/wp-content/uploads/IEEE-Reference-Guide.pdf. Last Accessed: March 17th, 2022.
- Withers-Martinez, C., Suarez, C., Fulle, S., Kher, S., Penzo, M., Ebejer, J.-P., Koussis, K., Hackett, F., Jirgensons, A., Finn, P., and Blackman, M. J. Plasmodium subtilisin-like protease 1 (SUB1): Insights into the active-site structure, specificity and function of a pan-malaria drug target. *International Journal for Parasitology*, 42(6):597–612, 2012.

Appendix A

Media Content

If the dissertation has a DVD or pendrive attached to it, you will need a section which explains what is on the media (structure, files, data, etc.). This could be a table with filename and description.

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Appendix B

Installation Instructions

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APPENDIX B. INSTALLATION INSTRUCTIONS

Appendix C

User Manual

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