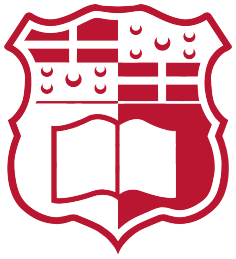

Machine Learning Approaches to the Blockchain

some hyped-up tagline

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Supervised by Dr Zhivago

Co-supervised by Dr Who

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Faculty of Something

University of Malta

June, 2022

A dissertation submitted in partial fulfilment of the requirements for the degree of M.Sc. in Your Degree.

WWW.UM.EDU.MT

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To The Avengers

You know, for saving the world.

Acknowledgements

These are the acknowledgements. 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.

Abstract

This is the abstract. 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.

Contents

List of Figures

List of Tables

List of Abbreviations

CDMA Code Division Multiple Access 6
GSM Global System for Mobile communication 6
TDMA Time Division Multiple Access 6
UA Used Acronym 6

1

Introduction

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

General structure of this chapter should read as follows. This chapter should be used to motivate your study and answer the question "Why is this important?". Also, it should define what you set out to achieve (these will be revisited in the conclusions chapter). You should describe your approach to the Aims and Objectives, including an evaluation part.

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 | 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.

1.3 | Our Approach

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.

1.4 | Document Structure

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

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).

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

where:

e = the constant
i = of complex fame
π = 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 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.

2.4 | 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.

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.

2.5 | An Example of a Side-by-Side Figure

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

(a) Goku

(b) More Goku

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 Using 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.

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

	$w = 8$			$w = 16$		
	$t = 0$	$t = 1$	$t = 2$	$t = 0$	$t = 1$	$t = 2$
$dir = 1$						
c	0.0790	0.1692	0.2945	0.3670	0.7187	3.1815
c	-0.8651	50.0476	5.9384	-9.0714	297.0923	46.2143
c	124.2756	-50.9612	-14.2721	128.2265	-630.5455	-381.0930
$dir = 0$						
c	0.0357	1.2473	0.2119	0.3593	-0.2755	2.1764
c	-17.9048	-37.1111	8.8591	-30.7381	-9.5952	-3.0000
c	105.5518	232.1160	-94.7351	100.2497	141.2778	-259.7326

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.

2.7 | 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).

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.

2.8 | An Example of a Long Table

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. of Actives	No. of Decoys	ROC AUC Tanimoto	ROC AUC Tversky	BEDROC Tanimoto	BEDROC Tversky	$EF_{1\%}$ Tanimoto	$EF_{1\%}$ Tversky
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
AOFB	121	6,875	0.422	0.464	0.045	0.027	1.652	0.000
BACE1	283	18,100	0.441	0.775	0.017	0.310	0.000	13.062
BRAF	152	9,950	0.612	0.639	0.208	0.165	12.502	5.264
CASP3	199	10,694	0.600	0.734	0.068	0.258	0.502	7.031
CDK2	474	27,838	0.467	0.507	0.021	0.048	0.000	1.055
COMT	41	3,846	0.789	0.889	0.338	0.665	19.447	58.341
CP2C9	120	7,449	0.518	0.634	0.058	0.186	1.660	8.299
CP3A4	170	11,787	0.450	0.493	0.022	0.057	0.000	2.345
CSF1R	166	12,149	0.526	0.542	0.136	0.152	6.031	7.238
CXCR4	40	3,405	0.575	0.722	0.217	0.134	12.665	0.000
DEF	102	5,699	0.732	0.833	0.212	0.379	10.786	15.689
DHI1	330	19,348	0.481	0.595	0.089	0.062	2.422	1.211
DPP4	533	40,941	0.586	0.591	0.154	0.157	4.312	3.937
DRD3	480	34,048	0.484	0.441	0.043	0.046	1.251	0.626
DYR	231	17,196	0.694	0.758	0.210	0.230	6.504	7.371
EGFR	542	35,047	0.593	0.491	0.054	0.037	0.922	0.000
ESR1	383	20,683	0.838	0.861	0.527	0.594	31.281	39.101
ESR2	367	20,199	0.844	0.870	0.563	0.644	20.130	32.644
FA10	537	28,324	0.564	0.674	0.058	0.118	0.930	2.232
FA7	114	6,249	0.762	0.859	0.210	0.332	6.105	8.721
FABP4	47	2,749	0.786	0.744	0.191	0.276	0.000	10.623
FAK1	100	5,350	0.642	0.531	0.111	0.065	2.019	0.000

(continued...)

Target	No. of Actives	No. of Decoys	ROC AUC Tanimoto	ROC AUC Tversky	BEDROC Tanimoto	BEDROC Tversky	$EF_{1\%}$ Tanimoto	$EF_{1\%}$ Tversky
FGFR1	139	8,698	0.511	0.522	0.036	0.088	0.722	1.445
FKB1A	111	5,799	0.605	0.751	0.162	0.164	8.122	3.610
FNTA	592	51,493	0.411	0.625	0.012	0.132	0.000	4.053
FPPS	85	8,842	0.917	0.985	0.323	0.776	2.360	36.581
GCR	258	14,998	0.805	0.834	0.244	0.324	3.092	8.116
GLCM	54	3,790	0.667	0.685	0.182	0.279	1.873	11.240
GRIA2	158	11,842	0.662	0.684	0.248	0.154	11.392	5.696
GRIK1	101	6,547	0.656	0.668	0.203	0.102	7.978	1.995
HDAC2	185	10,300	0.676	0.734	0.187	0.201	4.318	4.318
HDAC8	170	10,449	0.640	0.819	0.120	0.377	2.946	8.250
HIVINT	100	6,640	0.390	0.554	0.030	0.116	0.000	3.018
HIVPR	535	35,724	0.663	0.872	0.072	0.490	0.187	23.898
HIVRT	338	18,884	0.495	0.475	0.124	0.085	4.443	1.777
HMDH	170	8,750	0.480	0.906	0.068	0.652	2.358	35.963
HS90A	88	4,850	0.635	0.506	0.096	0.083	0.000	3.436
HXK4	92	4,700	0.662	0.803	0.206	0.307	15.192	9.766
IGF1R	148	9,300	0.502	0.575	0.057	0.189	2.037	14.941
INHA	43	2,300	0.493	0.575	0.031	0.045	0.000	0.000
ITAL	138	8,500	0.619	0.465	0.037	0.065	0.000	0.728
JAK2	107	6,500	0.472	0.475	0.073	0.118	2.807	6.549
KIF11	116	6,850	0.755	0.781	0.149	0.219	4.289	2.574
KIT	166	10,449	0.463	0.437	0.045	0.030	0.000	0.000
KITH	57	2,850	0.649	0.838	0.228	0.709	14.069	47.483
KPCB	135	8,699	0.753	0.813	0.220	0.338	8.923	12.641
LCK	419	27,391	0.471	0.437	0.031	0.043	0.000	1.910
LKHA4	171	9,448	0.718	0.694	0.238	0.150	8.203	1.758
MAPK2	101	6,148	0.660	0.670	0.174	0.199	5.988	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	104	6,600	0.488	0.489	0.020	0.031	0.962	0.962
MK14	578	35,847	0.511	0.589	0.040	0.064	0.173	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	6,200	0.853	0.859	0.342	0.290	11.221	3.060
PA2GA	99	5,150	0.793	0.756	0.225	0.153	1.020	3.059
PARP1	508	30,029	0.635	0.692	0.215	0.231	11.234	7.884
PGH1	195	10,798	0.645	0.637	0.077	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	103	6,946	0.575	0.578	0.161	0.181	4.888	8.799
PPARA	373	19,399	0.783	0.778	0.262	0.280	6.693	7.764
PPARD	240	12,250	0.547	0.544	0.078	0.098	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	50	2,700	0.851	0.837	0.281	0.255	7.857	1.964

(continued…)

Target	No. of Actives	No. of Decoys	ROC AUC Tanimoto	ROC AUC Tversky	BEDROC Tanimoto	BEDROC Tversky	$EF_{1\%}$ Tanimoto	$EF_{1\%}$ Tversky
PYGM	77	3,944	0.403	0.492	0.016	0.137	0.000	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	63	3,450	0.874	0.852	0.598	0.542	35.050	27.084
SRC	524	34,500	0.565	0.477	0.065	0.050	0.382	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	449	25,975	0.711	0.815	0.147	0.280	2.898	6.688
TRYB1	148	7,650	0.670	0.670	0.153	0.132	3.378	3.378
TYSY	109	6,745	0.594	0.725	0.071	0.226	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

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.

2.9 | 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	y	z	a	A_m	B	C	x	y	z	a	A_m	B	C
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

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.

2.10 | A Theorem Example

Theorem 2.10.1. *Let f be a function whose derivative exists in every point, then f is a continuous function.*

Theorem 2.10.2 (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 2.10.2 is the statement in the next corollary.

Corollary 2.10.2.1. *There's no right rectangle whose sides measure 3 cm, 4 cm, and 6 cm.*

You can reference theorems such as 2.10.2 when a label is assigned.

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.

2.11 | A Lemma Example

Lemma 2.11.1. *Given two line segments whose lengths are a and b respectively there is a real number r such that $b = ra$.*

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.

2.12 | A Proof Example

Lemma 2.12.1. *Given two line segments whose lengths are a and b respectively there is a real number r such that $b = ra$.*

Proof. 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. □

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2.13 | A Listing Example

Here you go.

```
import numpy as np

def incmatrix(genl1,genl2):
  m = len(genl1)
  n = len(genl2)
  M = None #to become the incidence matrix
  VT = np.zeros((n*m,1), int)  #dummy variable

  #compute the bitwise xor matrix
  M1 = bitxormatrix(genl1)
  M2 = np.triu(bitxormatrix(genl2),1)

```

```
  for i in range(m-1):
    for j in range(i+1, m):
      [r,c] = np.where(M2 == M1[i,j])
      for k in range(len(r)):
        VT[(i)*n + r[k]] = 1;
        VT[(i)*n + c[k]] = 1;
        VT[(j)*n + r[k]] = 1;
        VT[(j)*n + c[k]] = 1;

        if M is None:
          M = np.copy(VT)
        else:
          M = np.concatenate((M, VT), 1)

        VT = np.zeros((n*m,1), int)

  return M
```

Listing 2.1: My Listing Caption

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 | 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.

Algorithm 1 An algorithm with caption

Require: $n \geq 0$
Ensure: $y = x^n$
  $y \leftarrow 1$
  $X \leftarrow x$
  $N \leftarrow n$
  while $N \neq 0$ **do**
    if N is even **then**
      $X \leftarrow X \times X$
      $N \leftarrow \frac{N}{2}$ ▷ This is a comment
    else if N is odd **then**
      $y \leftarrow y \times X$
      $N \leftarrow N - 1$
    end if
  end while

2.15 | Some 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.

2.15.1 | 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

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2.15.1.1 | Some Sub-sub-technique One

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

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 informa-

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Imagine some colourful description on Some Technique Three.

2.17 | Evaluation Criteria

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

2.18 | 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).

2.19 | An Example of Suppressing Page Numbers on A Float Page

Kindly refer to Figure 2.3.

2.20 | Summary

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.

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.

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]

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.

3.1 | Summary

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

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.

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.

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.

And after the second paragraph follows the third 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.

After this fourth paragraph, we start a new paragraph sequence. 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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4.1 | Summary

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.

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

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

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

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.

6.3 | Future Work

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.

6.4 | Final Remarks

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.

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.

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. 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

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B

Installation Instructions

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. 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,

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User Manual

And after the second paragraph follows the third 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.

After this fourth paragraph, we start a new paragraph sequence. 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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