Master's Thesis

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1710000 Your Name

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Abstract

Write abstract here.

Keywords: Keyword1, keyword2, keywor3.

Acknowledgment

Write acknowledgment here.

List of Abbreviations

CEO	Chief executive officer
i.i.d.	Independent and identically distributed
IoT	Internet of Things
pmf	Probability mass function

List of Symbols

$C(\cdot)$	the Shannon capacity using Gaussian codebook
t	time index
$\delta(\epsilon)$	a function of ϵ that tends to zero as $\epsilon \to 0$

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Chapter 1

Introduction

1.1 Section

1.1.1 Subsection

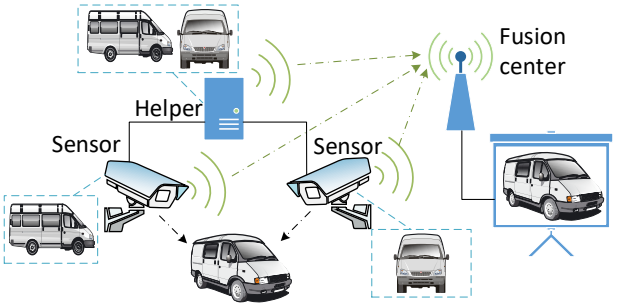
1.1.1.1 Subsubsection

Chapter 2
    Appendix A

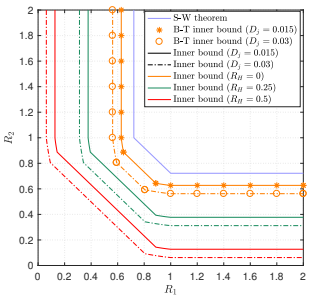
1.2 Figures

Figure 1.1: JPG figure title.

Figure 1.1
Figure 1.2
Figure 1.2(b)



(a) PDF figure title.



(b) EPS figure title.

Figure 1.2: Subfigure Examples.

1.3 Tables

	a	b
1	0.25	0.33
2	0.75	0.66

Table 1.1: Caption of the table

Table 1.1

1.4 Equations

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}. \tag{1.1}$$

$$x^2 = -(2x + 1) \tag{1.2}$$

$$x^2 = -2x - 1$$

$$x^2 + 2x + 1 = 0 \tag{1.3}$$

$$(x + 1)^2 = 0. \tag{1.4}$$

(1.4)
(1.1 – 1.3)

1.5 Abbreviations and Symbols

independent and identically distributed (i.i.d.)

Chief executive officer (CEO)
CEOs
Internet of Things (IoT)
Probability mass functions (pmfs)

1.6 Citations

[1]
[2–5]
[1, 4]
[6]

1.7 Algorithms

Algorithm 1.1 An Example

Input: x, n
Output: y
set $y = 1$;
if $n == 0$ **then**
  set $y = 1$;
else if $n > 0$ **then**
  for $i = 1$ **to** n **do**
    set $y = y \times x$;
  end for
else
  for $i = n$ **to** -1 **do**
    set $y = y \div x$;
  end for
end if

Algorithm 1.1

1.8 Codes

No Number Title

```
1 int main(){
2   for(int i=0; i<3; i++){
```

```
3       cout<<i<<endl;
4     }
5     return 0;
6   }
```

Code 1.1: Input Code from File

```
1 \chapter{Conclusion}\label{cha:conclusion}
2
3 This thesis ...
```

Code 1.1

Chapter 2

Conclusion

This thesis ...

Appendix A

Example

Number test in Appendices.

$$x(i) = x^i, \text{ for } i = \{1, 2, \cdots, n\} \tag{A.1}$$

(A.1)

Table A.1

Parameter	**Value**
Block length	10000 bits
Number of Blocks	1000

Table A.1: Table in Appendix

Appendix B

Code Example

```
function result = H2(d)
    if d==0 || d==1
        result=0;
    else
        result=-d*log2(d)-(1-d)*log2(1-d);
    end
end

function mid = H2_inv(r)
    accuracy=1e-9;
    if r<=0
        mid=0;

        return;
    end
    min=0;
    max=0.5;
    mid=0.25;
    while max-min>accuracy
        tmp=H2(mid);
        if abs(tmp-r)<accuracy
            break;
        end
        if tmp>r
            max=mid;
        else
            min=mid;
        end
        mid=(max+min)/2;
    end
    mid;
end

function h=joint_entropy(P)
    h=0;
    n=numel(P);
    P_=ones(1,n)-P;
    if n==0
```

```
39          h=0;
40      elseif n==1
41          h=1;
42      else
43          for i=1:2^n
44              A=bitget(i,1:n);
45              j=A==1;
46              k=A==0;
47              Pj=P(j);
48              Pk=P(k);
49              Pj_=P_(j);
50              Pk_=P_(k);
51              q=0.5*(prod(Pj)*prod(Pk_)+prod(Pj_)*prod(Pk));
52              h=h-q*log2(q);
53          end
54      end
55  end
```

References

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[2] C. Berrou and A. Glavieux, "Near optimum error correcting coding and decoding: Turbo-codes," *IEEE Transactions on Communications*, vol. 44, no. 10, pp. 1261–1271, Oct. 1996.

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[5] ISO/IEC International Standard 11172-3, "Coding of moving pictures and associated audio for digital storage media at up to about 15 Mbit/s - Part3: Audio," 1993.

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Publications

[1] ISO/IEC International Standard 11172-3, "Coding of moving pictures and associated audio for digital storage media at up to about 15 Mbit/s - Part3: Audio," 1993.

[2] A. El Gamal and Y.-H. Kim, *Network information theory*. Cambridge, UK: Cambridge University Press, 2011.