Use all CAPITALS, single space within the title, followed by double space. Use the style "Title"

Use all CAPITALS followed by double space Use the style "CAPITAL HEADING". Abstract should be 1 page for MS & 2 pages for PhD

ABSTRACT

TITLE

Use all small letters followed by single space. Use the style "By Author"

by
FirstName LastName

Capitalize Each Word, single spaced followed by 36 points. Use the style "Author"

Text of paragraph one.

Text of paragraph two. Note the indent.

Spacing				
Before:	0 pt		Line spacing:	At:
After:	36 pt		Double	
☐ Don't add space between paragraphs of the same style				

The first paragraph is always flushed to the left. Followed by the first line of all other paragraphs is indented.

The margins for the entire document must be set at 1.5" on the left and 1" on the right.

ABSTRACT

ADAPTIVE SPACE-TIME PROCESSING
FOR WIRELESS COMMUNICATIONS

by
Xiao Cheng Bernstein

Adaptive space-time processing techniques have been considered in the past to increase the capacity of two major, multiple-access wireless communication systems: Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA). Space processing uses multiple antennas which, in turn, provide alternative signal paths in order to cancel interferences and combat multipath fading. In this investigation, the *eigencanceler* method was used to evaluate theoretical optimum combinations. The feasible *direct matrix inverse* (DMI) technique was also evaluated. An analysis of the system performance revealed that when data sets are small, the eigencanceler technique is superior to the DMI technique. A simple projection-based algorithm was proposed and its performance analyzed.

The capacity of CDMA communication systems is normally restricted by multiple-access interferences (MAI). It was shown that spatial and temporal processing can be combined to increase the capacity of CDMA-based wireless communications systems. The degrees of freedom provided by space-time processing were exploited to combat both fading and MAI. Specifically, the following methods were considered: (1) space-time diversity, (2) cascade optimum spatial-diversity temporal, (3) cascade optimum spatial-optimum temporal, and (4) joint-domain optimum processing. It was proved that, due to its interference cancellation capability, *optimum combining* provides significantly better performance than diversity techniques.

TITLE

by
FirstName LastName

Spacing
Before: 0 pt   Line spacing: At:
After: 36 pt   Double
☐ Don't add space between paragraphs of the same style

A Dissertation
Submitted to the Faculty of
New Jersey Institute of Technology
In Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy in Program

Department

Graduation Date (either January, May or August + year)

ADAPTIVE SPACE-TIME PROCESSING
FOR WIRELESS COMMUNICATIONS

by
Xiao Cheng Bernstein

A Dissertation
Submitted to the Faculty of
New Jersey Institute of Technology
in Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy in Electrical Engineering

Department of Electrical and Computer Engineering

January 1996

Copyright page is typically used only for the Ph.D. Dissertation; For the Master's Thesis, a blank page is inserted. Use the style "Normal" with double spaced.

.

APPROVAL PAGE

TITLE

FirstName LastName

Spacing					
Before:	0 pt		Line spacing:		At:
After:	36 pt		Double		
☐ Don't add space between paragraphs of the same style					

Name, Dissertation Advisor   Date
Title, College or Place of Employment

Name, Committee Member   Date
Title, College or Place of Employment

Name, Committee Member   Date
Title, College or Place of Employment

Name, Committee Member   Date
Title, College or Place of Employment

Name, Committee Member   Date
Title, College or Place of Employment

APPROVAL PAGE

ADAPTIVE SPACE-TIME PROCESSING
FOR WIRELESS COMMUNICATIONS

Xiao Cheng Bernstein

Dr. Alexander M. Haimovich, Dissertation Advisor   Date
Associate Professor of Electrical and Computer Engineering, NJIT

Dr. Yeheskel Bar-Ness, Committee Member   Date
Distinguished Professor of Electrical and Computer Engineering, NJIT

Dr. Michael Porter, Committee Member   Date
Professor of Mathematics, NJIT

Dr. Zoran Siveski, Committee Member   Date
Assistant Professor of Electrical and Computer Engineering, NJIT

Dr. Jack H. Winters, Committee Member   Date
Member of Technical Staff, AT&T Bell Laboratories, Holmdel, NJ

BIOGRAPHICAL SKETCH

Author: FirstName LastName

Degree: Master of Science / Doctor of Philosophy

Date: Month and Year (you are graduating)

Date of Birth: Month, Day, Year (For e.g., November 3, 1992)

Place of Birth: City, State, Country (if outside US)

Undergraduate and Graduate Education:

- Most recent education experience goes here

- The further down you go, the older the education experience - for example, a Master's would go above your Bachelor's degree

- Entries include degree, university, location of university, and year awarded

Example:
- Doctor of Philosophy in Computer Science,
  New Jersey Institute of Technology, Newark, New Jersey 2024

Major: Your major / program (Indicate your current program)

Presentations and Publications:

- Most recent publication goes first.

- The further down you go, the older the presentations - for example, a 2018 presentation would go above a presentation from 2015.

- This section may be excluded if you do not have any relevant presentations or publications.

- You can list in preparation, submitted, under review publications.

BIOGRAPHICAL SKETCH

Author: Xiao Cheng Bernstein

Degree: Doctor of Philosophy

Date: January 1996

Date of Birth: November 3, 1965

Place of Birth: Shanghai, P. R. China

Undergraduate and Graduate Education:

- Doctor of Philosophy in Electrical Engineering,
  New Jersey Institute of Technology, Newark, NJ, 1996

- Master of Science in Electrical Engineering,
  Shanghai Jiao Tong University, Shanghai, P. R. China, 1991

- Bachelor of Science in Electrical Engineering,
  Shanghai Jiao Tong University, Shanghai, P. R. China, 1988

Major: Electrical Engineering

Presentations and Publications:

Xiao C. Wu and Alexander M. Haimovich, "Adaptive arrays for increased performance in mobile communications," The Sixth International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'95), Toronto, Canada, September 1995.

Xiao C. Wu and Alexander M. Haimovich, "Space-time processing for CDMA communications," Proceedings of the 1995 Conference on Information Science and Systems, Baltimore, MD, pp. 371-376, March 1995.

Xiao C. Wu and Alexander M. Haimovich, "A simple projection based adaptive array with applications to mobile communications," Proceedings of the 1994 Adaptive Antenna Systems Symposium, Melville, NY, pp. 37-42, November 1994.

< Write personal dedication in Italics >
< Samples are available for viewing in the Office of Graduate Studies >

< Write personal dedication >
< Samples are available in the Office of Graduate Studies >

ACKNOWLEDGMENTS

Use all CAPITALS followed by double space Use the style "CAPITAL HEADING".

Write in the Justify Alignment with Double spaced. Use the style "Normal"

ACKNOWLEDGMENTS

The order for this section is as follows: Thesis or Dissertation Advisor, Committee members, Funding source and Technical support. Many students include peers (by name please) who were key to their success and some also finish with family members.

TABLE OF CONTENTS

Chapter Title appear in all CAPITALS

The table of Contents should be created automatically. Ensure that you have used the built-in Heading styles (Heading 1, Heading 2, Heading 3 etc.) to format the titles and subtitles of your document. These styles are found in the "Styles" group on the "Home" tab.

Insert Table of Contents
1. Go to the "References" tab.
2. Click on "Table of Contents" in the Table of Contents group.
3. Choose one of the built-in formats from the dropdown menu, or click on "Custom Table of Contents" to customize the appearance further.

Update Table of Contents: If you make changes to your document after inserting the table of contents, you'll need to update it to reflect those changes:
1. Right-click on the table of contents.
2. Choose "Update Field" from the context menu.
3. Select "Update entire table" and click "OK".

TABLE OF CONTENTS

"Chapter" and "Page" have to be listed again on the second page of TABLE OF CONTENTS

TABLE OF CONTENTS

(Continued)

When TABLE OF CONTENTS is longer than one page, then insert (Continued) here

TABLE OF CONTENTS
(Continued)

LIST OF TABLES

LIST OF TABLES

LIST OF FIGURES

x

LIST OF FIGURES

LIST OF SYMBOLS (Optional)

©	Copyright
∫	Integration
Å	Angstrom (10-10 meters)

LIST OF SYMBOLS

©	Copyright
$\int$	Integration
Å	Angstrom (10^{-10} meters)
SAR	Specific Absorption Rate
Π	3.415
♀	Female
®	Registered
≈	Approximately
♠	Spade Suit
∂	Partial Differential
#	Number Sign
¢	Cent Sign

LIST OF DEFINITIONS (Optional)

Accuracy	How closely an instrument measures the true or actual value of the process variable being measured or sensed.
Acidic	The condition of water or soil which contains a sufficient amount of acid substances to lower the pH below 7.0.
Alkaline	The condition of water or soil which contains a sufficient amount of alkali substances to raise the pH above 7.0.
Effective range	That portion of the design range (usually upper 90 percent) in which an instrument has acceptable accuracy.

LIST OF DEFINITIONS

Accuracy

How closely an instrument measures the true or actual value of the process variable being measured or sensed.

Acidic

The condition of water or soil which contains a sufficient amount of acid substances to lower the pH below 7.0.

Alkaline

The condition of water or soil which contains a sufficient amount of alkali substances to raise the pH above 7.0.

Analog

The readout of an instrument by a pointer (or other indicating means) against a dial or scale.

Cohesion

Molecular attraction which holds two particles together.

Effective range

That portion of the design range (usually upper 90 percent) in which an instrument has acceptable accuracy.

Linearity

How closely an instrument measures actual values of a variable through its effective range; a measure used to determine the accuracy of an instrument.

Surfactant

Abbreviation for surface-active agent. The active agent in detergents that possesses a high cleaning ability.

Standard

A physical or chemical quantity whose value is known exactly, and is used to calibrate or standardize instruments.