English Technical Writing

Gerry Rau
Fall 2023 (112-1)
Class 4

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Feedback

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Lots of positive comments

- Everything in class today is perfect. I like the professor's enthusiasm, that makes me interested in learning.
- My favorite part of the class today is learning how to use the Word file to format the tables, it will make our table look more professional and make the reader more interested in reading our articles…

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Hard to identify some components

- I learned the detail difference between some similar component. It's a little hard to identify those components in the article, especially for distinguishing background and framework.
  - It will become clearer as we talk about each division in more detail over the next 3 weeks
  - Sometimes authors are not clear, mixing more than one component in a paragraph

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Establishing Motivation and Necessity




Peer Review	Presentation Components in the Introduction	Introduction Division: Component Analysis	Assignment

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Peer Review

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Purpose of Peer Review

- Learn to evaluate other work
  - What makes some writing clearer
- Help one another
  - Check to see if everything is included, clear
  - Get ideas to improve your own work
- See other document structures

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New partners

- Take one image, do not show it to anyone else
- One other person has the same image
- You must find that person by describing your image
- Do not show the other person your image until you are sure the images are the same

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Describing

- Details are important
- Details are what separate your work from others' work
- Sit with your new partner for peer review
- Introduce yourselves

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Checking what you have done

Homework, Chapters 2, 3, 4:
Overall structure
Claim about overall structure (does your field follow IPTC or IMRD format?)
and support (number of sections, section titles, length of sections, other)
with comments on any unusual features or problems
Tables for 3 articles: overall structure (like those in ch. 2)
Text summary pointing to tables: "As shown in Table ..."
Tables well-formatted
Number and Title for each table

Headings
Each part (Overall structure, Introduction, References) has a heading
Headings use Word Style to enable use of navigation pane
References
References for the 3 articles

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Text

- Is the claim clear?
- Is the support clear? Does it talk about:
  - number of sections, section titles, length of sections?
- Does the text refer to the tables for support?
  - "As shown in Table 1, ..."
  - "As you can see in Table 1, ..."
- Does it note any unusual features or problems?

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Table format

- Is the column alignment clear?
  - Words: Left or center align
  - Numbers: Right or center align
- Could things be added to make the tables clearer?
  - Division totals
  - Color to highlight
    - Totals
    - Largest division
- Is there blank space that could be eliminated?

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Headings and References

- Are there headings?
  - Do the headings use Word Styles?
- Are there references?
  - Are the references in the same format?

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Time to fix a few things

- This will be part of your final exemplar description
  - End of the first half of the course
- Correct it now, before you forget
- If you do not have time to finish, write a comment to yourself

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Adding parts

- Add more to each assignment

Writing a Claim	3 Divisions	Complete Description
Overview Introduction	Revise O, I	Revise O, I
	Process Testing, Concl.	Revise P, T, C
		Citations Graphics

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Components in the Introduction

Chapter 4

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Evaluate your understanding

- Why is it important to be part of an academic, disciplinary or research community? How does the Introduction help you claim your role in that community?

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Joining a Community

3 Key Rules of Joining a Community

- Know the vocabulary *"Light Saber"*
- Know the important people
- Know the history *"May the Force be with You!"*

"Sith"

"Jedi"

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Evaluate your understanding

- How do Introductions differ in IMRD and IPTC format?
- What common components are generally present in an Introduction, and what is the role of each in supporting the main claim?

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Implicit Claims in Journal Articles

Figure 3.1

IMRD

I) You have identified an important, unanswered question
M) You have gathered data in a valid, reliable way
R&D) You have a good explanation for your data

IPTC

I) You have identified an important, unresolved problem
P) You have designed a workable solution to the problem
T&C) Your solution is better than other existing solutions

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Claims and Components IMRD

Claim	Components	Division
Important, unanswered question	Importance Need Research goal Framework	Introduction
Reliable, valid data	Research details Testing methods	Method
Good explanation for data	Data patterns Comparisons Interpretations Contribution	Results Discussion

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Claims and Components IPTC

Claim	Components	Division
Important, unresolved problem	Importance Need Research goal	Introduction
Workable solution	Framework Research details	Process
Better than other existing solutions	Testing methods Data patterns Comparisons Interpretations Contribution	Testing

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NEW component list

- Based on further research, responses from reviewers
- Download "New component list with examples" from Ecourse
- Use these categories (not those in the book) as you do your work

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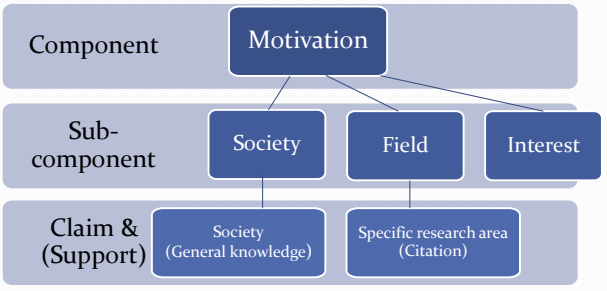
Motivation (Importance)



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Motivation (Importance)

- Why should the reader be interested in this topic?

- It is important to society
  - "… essential part of …"
- It is important to researchers
  - "Extensive research has been conducted …"
- Story to generate interest
  - (common in popular writing, not in research articles)

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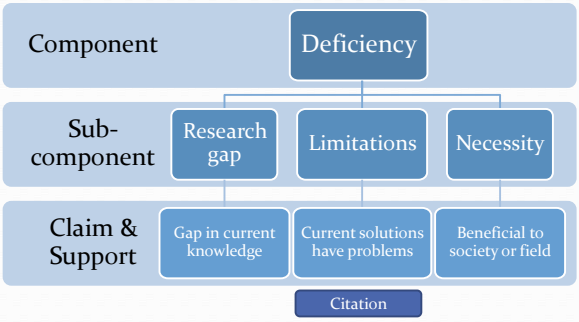
Deficiency (Need)



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Deficiency (Need)

- Why is more research needed on this?

- Nothing has been done
  - "To the best of our knowledge, this is the first …"
- What has been done is not good enough
  - "However", "drawbacks", "limitations"
- Society will benefit
  - "… use less material, lower cost, …"

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Evaluate your understanding

- Why is the research goal the most important component of any research article?

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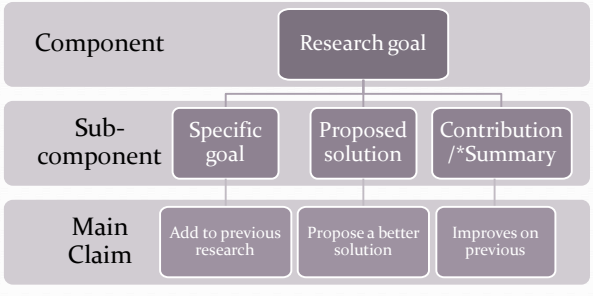
Research Goal



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Research goal

- How does this research contribute?

- Our goal addresses that need
  - "Therefore, our aim in this paper …"
- Our solution solves the problem
  - "In this paper we propose …"
- Our research makes a positive contribution
  - "… faster, more efficient [than current best]"

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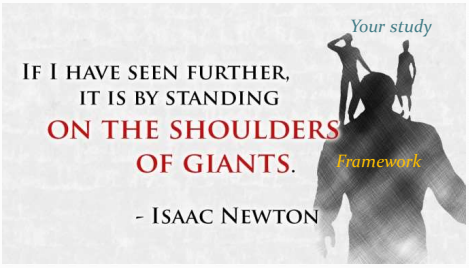
Foundation (Framework)

"Required background information to understand the present (proposed) study"



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Foundation (Framework)

- What is the foundation of your work? — May be in Introduction
- Accepted procedures followed
  - Mathematical formulas
- Problem formulation — Extend own previous work
  - How does our work extend previous work
- Model or Theoretical framework — Last method before goal
  - Model, approach, theory
- Justification
  - Why the approach we choose is the best

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Evaluate your understanding

- How do topic sentences and component markers help you, both as a reader and a writer?

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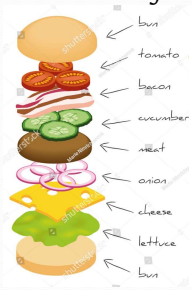
Component Analysis & Markers

"In English, each paragraph should have a single purpose that clearly contributes to the argument"



Expected order

Distinct (Marker)

With variation

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Presentation

Chapter 4

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Presentation

- Introduction 3/9 Neo
- Exercise 4.1

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Component Analysis: Introduction

Exercise 4.1

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Components in the Introduction

1. Identify the components in each paragraph in the Introduction division of your first exemplar article and the component markers that help you identify them. Summarize this in a table. [Use NEW component list]
2. Does the Introduction follow the order of components as listed? [This is the claim, part 1 is the support.]
3. Where is the research goal stated in your exemplar articles, and how? If they use the phrase "to [the best of] our knowledge" or additional bullet points or sentences to expand on the goal, make note of that.
4. Is there a paragraph at the end of the Introduction that describes the organization of the rest of the paper?

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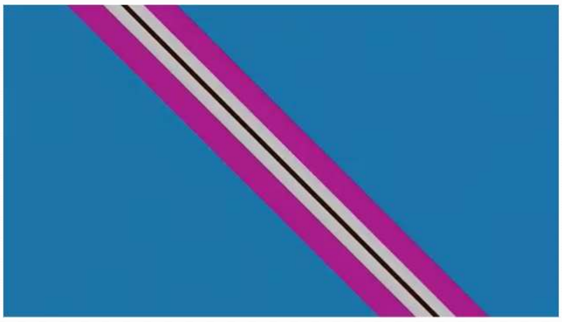
Exercise 4.1 (from MOOC 4b)



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Organization of the paper

- Final paragraph in Introduction
  - Describes briefly what is in each section
  - "In section 2, we … Section 3 presents …"
- Not present in all papers

- Not a 'claim' – not a component
- Still important to notice
- Mark as 'Organization'

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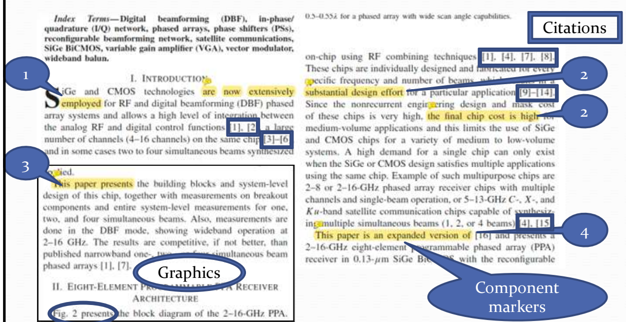
Locating component markers


Index Terms—Digital beamforming (DBF), in-phase/quadrature (I/Q) network, phased arrays, phase shifters (PSs), reconfigurable beamforming network, satellite communications, SiGe BiCMOS, variable gain amplifier (VGA), vector modulator, wideband balun.

I. INTRODUCTION

SiGe and CMOS technologies are now extensively employed for RF and digital beamforming (DBF) phased array systems and allows a high level of integration between the analog RF and digital control functions [1], [2], a large number of channels (4–16 channels) on the same chip [3]–[6], and in some cases two to four simultaneous beams synthesized ...ied.

This paper presents the building blocks and system-level design of this chip, together with measurements on breakout components and entire system-level measurements for one, two, and four simultaneous beams. Also, measurements are done in the DBF mode, showing wideband operation at 2–16 GHz. The results are competitive, if not better, than published narrowband one-, two-, or four-simultaneous beam phased arrays [1], [7].

II. EIGHT-ELEMENT PROGRAMMABLE PPA RECEIVER ARCHITECTURE

Fig. 2 presents the block diagram of the 2–16-GHz PPA.

0.5–0.55λ for a phased array with wide scan angle capabilities.

on-chip using RF combining techniques [1], [4], [7], [8]. These chips are individually designed and fabricated for every specific frequency and number of beams, which ... substantial design effort for a particular application [9]–[14]. Since the nonrecurrent engineering design and mask cost of these chips is very high, the final chip cost is high for medium-volume applications and this limits the use of SiGe and CMOS chips for a variety of medium to low-volume systems. A high demand for a single chip can only exist when the SiGe or CMOS design satisfies multiple applications using the same chip. Example of such multipurpose chips are 2–8 or 2–16-GHz phased array receiver chips with multiple channels and single-beam operation, or 5–13-GHz C-, X-, and Ku-band satellite communication chips capable of synthesizing multiple simultaneous beams (1, 2, or 4 beams) [4], [15].

This paper is an expanded version of [16] and presents a 2–16-GHz eight-element programmable phased array (PPA) receiver in 0.13-μm SiGe BiCMOS with the reconfigurable

An Eight-Element 2–16-GHz Programmable Phased Array Receiver With One, Two, or Four Simultaneous Beams in SiGe BiCMOS
Mustafa Sayginer and Gabriel M. Rebeiz

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Component analysis

- Main component in each paragraph
  - Possibly 2 components (Necessity/Goal)
- Mark component number
  - You may mark subcomponents, but not required
- Highlight component marker

- Check with me after you finish marking one article

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Make a table

You may show either components (1) or subcomponents (1a,b)

Table 4.1 Components in the first section (Introduction) of "Spatial query integrity"

Paragraph	*Topic sentence with component marker*	*Component (purpose)*
1a	The amount of digital spatial information available . . . has grown at an exceptional pace over the past decade.	1a (General importance)
1b	Consequently, . . . is becoming increasingly popular and has received a lot of attention in the research community.*	1b (Specific importance)
2	In this work, we focus on the . . . model, . . . However, there exist two major concerns with this model.	2b (Limitations)
3	The general framework commonly used in the literature . . . is based on . . .	2b (Current best solution)
4	The current state-of-the-art solution . . .	2b (Current best solution)
5	We argue that . . . suffer from several drawbacks.	2b (Limitations)
6	Motivated by the above observations, we propose . . ., a novel approach . . . based on . . .	3b (Proposed solution)
7	This paper subsumes our earlier work . . . by extending the . . . approach . . .	3a (Specific objective)
8	The remainder of the paper is organized as follows.	[Organization]

*This is actually the second part of the first paragraph, which discusses both levels of importance, but in other articles the two aspects may be in separate paragraphs.

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Assignment

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1 Write

- Homework 4:
  - Repeat Exercise 4.1 for other two articles
- Write a claim:
  - "My articles do/do not follow the expected pattern"
  - Expected pattern: components 1, 2, 3 in order
- Support the claim:
  - Make a table for each article
  - Show the component markers in each paragraph
  - "Table 4 shows ..."

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2 Turn in: Writing a claim

Homework, Chapters 2, 3, 4:
Overall structure
- **Claim about overall structure** (does your field follow IPTC or IMRD format?) and support (number of sections, section titles, length of sections, other) with comments on any unusual features or problems
- **Tables for 3 articles**: overall structure (like those in ch. 2)
  - Text summary pointing to tables: "As shown in Table ..."
  - Tables well-formatted
  - Number and Title for each table

Introduction
- **Claim about structure of Introduction** (does it follow the expected pattern?) and support (order of components, other) with comments on any unusual features or problems
- **Tables for 3 articles**: Introduction (like those in ch. 4)
  - Text summary pointing to tables: "As shown in Table ..."
  - Tables well-formatted
  - Number and Title for each table

Headings
- Each part (Overall structure, Introduction, References) has a heading
  - Headings use Word Style to enable use of navigation pane

References
- References for the 3 articles

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2 Turn in : Writing a claim

- Look at *Hints* in Textbook, Homework, chapters 2, 3, 4
- Submit by
  - Sunday night/Monday morning 2 AM
  - Late penalty applies

See example on ECourse2: Sample, Writing a Claim

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2 Grading standards

- See Word file: Assignments and Grading standards
  - On ECourse (Part 1/Assignments)

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3 Read

- Chapter 5
- Component analysis in division 2

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Bring to class

- Homework (Chapter 4), with my comments/grade
- Marked pdf: components in second division (one article, first look)

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Exemplar presentations

• Introduction	9/26	Neo
• Process/Method	10/3	Hai
• T&C / R&D	10/17	Charles
• Citations	10/24	Tran
• Graphics	10/31	Charlene

- Please sign up for a date to present
  - Show how to do the exercise for that week (previous slide)

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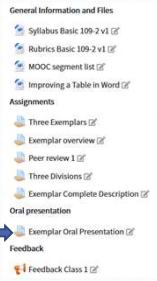
Presentations next week

- Do NOT
  - Present too much from the chapter
- Do
  - Summarize
  - Give examples from your exemplar articles
  - Show how to do the exercise(s) we will do
  - Submit to Ecourse by 11:00 am



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Rubric for Presentation

- See Word file: Assignments and Grading standards
  - On ECourse

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Feedback 4

- Please give me feedback on ECourse2:
  - What you learned
  - What you liked
  - What you disliked/suggestions
  - What questions you have

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