CIS 640 Writing in Computer Research
Strong Paragraphs are Built on Strong Sentences

Strong Paragraphs: Setup
Assume you are working on a specific section or subsection:
• List the key ideas for this section in logical order (this takes time and thought)
• One idea = one paragraph
• Write rough topics sentences for the paragraphs in this section
• Read them out loud to see if they tell the story you want at the very high level (logical flow).

Strong Paragraphs: Setup
• For each paragraph, under the topic sentence, jot down the key ideas that you wish to include to support the topic sentence (takes time and thought, revision and rethinking)
• Don’t worry about writing good sentences

Your paper may remain in the setup stage for a few days to weeks, undergoing revision and reorganization. When you are ready to focus on quality of writing, begin to construct strong sentences.

Strong Paragraphs are Built with a Set of Strong Sentences
• Consistency in verb tense
• Consistency in choice of personal pronouns
• Consistency in style, voice, audience

Verb Tense
Scientific papers typically only use present and past tense.
Present tense for eternal truths:
• The algorithm has complexity $O(n)$.
Present tense for statements about the paper:
• We discuss our results in Section 3.
Future tense rare – only in discussion of future work.

Present Tense
Present tense for description of scientific product (software, algorithm, concept)
• Sparrow provides fine-grained task scheduling.
• Lineup presents each attribute as a separate column...
• Under dropout training, each hidden unit takes a random variable as input and produces a random variable as output.
Present Tense

Present tense for description of current or ongoing experimental work
• We simulate the performance of batch and per-task sampling on both synthetic and empirical workloads.
• We show the performance of fast dropout LR on several sentiment and topic document classification tasks.
• First we consider how Facebook use compares with other channels.

Past Tense

Past tense for actions clearly completed.
• We interviewed 7,000,000 users of Instagram.
• We assigned each of the five applications to a different expert user at the San Diego Supercomputer Center.

Present or Past Tense

Present or past tense to describe related work.
• Leinberg et. al. generalized the problem to k-resource scheduling.
Vs.
• Leinberg et. al. generalize the problem to k-resource scheduling.
But be consistent in choice of present or past tense.

Consistency in Verb Tense

Figure 8 demonstrates that Sparrow outperforms alternative techniques and provides response times within 12% of an ideal scheduler. Compared to randomly assigning tasks to workers, Sparrow (batch sampling with late binding) reduces median query response time by 4-8x and reduces 95th percentile response time by over 10x. Sparrow also reduces response time compared to per-task sampling (a naïve implementation based on the power of two choices). Batch sampling with late binding provides query response times an average of 0.8x those provided by per-task sampling. Ninety-fifth percentile response times drop by almost a factor of two with Sparrow, compared to per-task sampling. Late binding reduces median query response time by an average of 16% compared to batch sampling alone. Sparrow also provides good absolute performance: Sparrow provides median response times just 12% higher than those provided by an ideal scheduler.

Verb Tense

Sometimes a matter of judgment
Reread the previous paragraph changing the verbs that describe results to past tense.

Also, acceptable but be consistent!
Note one or more verbs do not change from present to past (why?)

Parallel Construction

Use the same syntactic structure when comparing and contrasting
BAD: In SIMD, the same instructions are applied simultaneously to multiple data sets, whereas in MIMD different data sets are processed with different instructions.
GOOD: In SIMD, multiple data sets are processed simultaneously by the same instructions, whereas in MIMD multiple data sets are processed simultaneously by different instructions.
Parallel Construction

Use the same syntactic structure when comparing and contrasting.

**BAD:** Access is fast, but at the expense of slow update.
**GOOD:** Access is fast but update is slow.

**BAD:** The performance gains are the result of tuning the low-level code used for data access and improved interface design.
**GOOD:** The performance gains are the result of tuning the low-level code used for data access and of improved interface design.

Parallel Construction in Bulleted Lists

**BAD**
To implement system-load adaptation and fragmentation reduction, SCOJO takes the following major steps:

- Determine the job target sizes depending on the system load;
- Shrinkage or expansion of running malleable jobs to their target sizes;
- During backfilling, further shrinkage of new short or medium adaptable jobs to fit them into the machine;
- SCOJO then expands new moldable jobs to exploit any unused resources.

**GOOD**

- An analysis of the roles of the source address in today’s Internet.
- The definition of design options for an accountability address and the accompanying mechanisms for holding hosts accountable in a privacy-preserving way.
- An analysis of the impact of those design options on the privacy-accountability tradeoff.
- The definition and evaluation of two end-to-end instantiations of APIN.

Parallelism Construction

**BEAUTIFUL**

In dwelling, live close to the ground.
In thinking, keep to the simple.
In conflict, be fair and generous.
In governing, don’t try to control.
In work, do what you enjoy.
In family life, be completely present.

(Tao Te Ching, Chapter 8)

Avoid lengthy, parenthetical statements

**BAD:**
The job consistently ran faster using our algorithm, although the same results might not be obtained on systems with a slow L2 cache, provided the data was sorted by type first.

**BETTER:**
The job consistently ran faster using our algorithm provided the data was first sorted by type. However, we have not yet determined whether the results will hold on systems with a slow L2 cache.
Avoid lengthy, parenthetical statements

**BAD:** Experiments, with the improved version of the algorithm as we have described, are the step the confirms our speculation that performance would improve.

**BETTER:** Experiments with the revised version of the algorithm confirm its improved performance.

Use a variety of sentence formats

**NOT SO GOOD (is this parallel construction??)**
We conducted a three-wave survey of Facebook users in June, July, and August 2011 to analyze the relationship between SNS activity and changes in tie strength. We asked the participants about their relationships with up to eight ties on Facebook. We matched the participants’ responses to the server logs of the participants’ Facebook activity.

**GOOD (This is what the authors actually wrote.)**
To analyze the relationship between SNS activity and changes in tie strength, we conducted a three-wave survey of Facebook users in June, July, and August 2011. The survey contained about their relationships with up to eight ties on Facebook. Survey responses were matched to the server logs of the participants’ Facebook activity.