Pro-tips to enhance your research equations

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EPFL Library

Coffee Lecture #02
Nov 10, 2020
Learning objectives

- Know how to improve a research equation
- Get an overview of the tips to refine the scope of your research equation
Structured search

- Start early
- Be strategic
The strategy

- Step 1: Check your research question
- Step 2: Extract the concepts
- Step 3: Find all the keywords! (+ their translations, abbreviations…)
- Step 4: Build a research equation
- Step 5: … Learn and adapt!
## Keywords and Synonyms

<table>
<thead>
<tr>
<th>Concept#1</th>
<th>Concept#2</th>
<th>Concept#3</th>
<th>Concept#4</th>
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### Abstract

In this article, we achieve a closed-loop control over haptic feedback, first time for an entire novel soft pneumatic actuator (SPA) with soft strain sensors, called SPA-skin, that is capable of high-frequency sensing and actuation. To close-loop control the SPA-skin requires a cohesively integrated system. Our system consists of a stretchable low profile compliant thin-metal film strain sensor that creates a novel bidirectional platform for tactile vibration feedback. With this prototype, we demonstrated control of the actuator for an arm force up to 1 N maintained under variable mechanical loadings. We further characterized static and dynamic behavior over a range of actuation amplitudes and frequencies as well as of this system to predict the actuator inflation state only using the embedded sensor’s multifunctional multi-layer system that can readily be implemented as a high-speed whole contact sensing and vibrotactile feedback.
- **AND** to combine key concepts
- **OR** to add key concepts
- **NOT** to exclude concepts
(visual OR retin* OR "optic nerve" OR "visual cortex" OR vision OR phosphene OR eye) AND (prosthes?s OR artificial OR "electrical stimulation" OR bionic)
Minor tweaks

- Truncation with *
- Wildcards with ?
- Phrase searching with «»

(visual OR retin* OR "optic nerve" OR "visual cortex" OR vision OR phosphene OR eye) AND (prosthes?s OR artificial OR "electrical stimulation" OR bionic)
Is it the equation of your dreams?

- Noise VS Silence
- Check your search results, read abstracts
- Do another iteration
### Keeping track

<table>
<thead>
<tr>
<th>Source: Web of Science Core Collection</th>
<th>Equation</th>
<th>Search Fields</th>
<th>Filters</th>
<th># of results</th>
<th>Relevant references</th>
<th>Observations</th>
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<td>Combine with ...</td>
</tr>
</tbody>
</table>

- Keep note of what works
- Set up alerts
Thank you!

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