Research Methods in computer science

Spring 2019

Lecture 6

Omprakash Gnawali February 4, 2019

Agenda

HW2 Live Grading

Research Paper Anatomy and Types

Citations

Assignment

Recap of research formulation questions

Coffee machine pitch

Anatomy of a Research Paper

Abstract

Introduction

Related Work

Design and Implementation

Evaluation

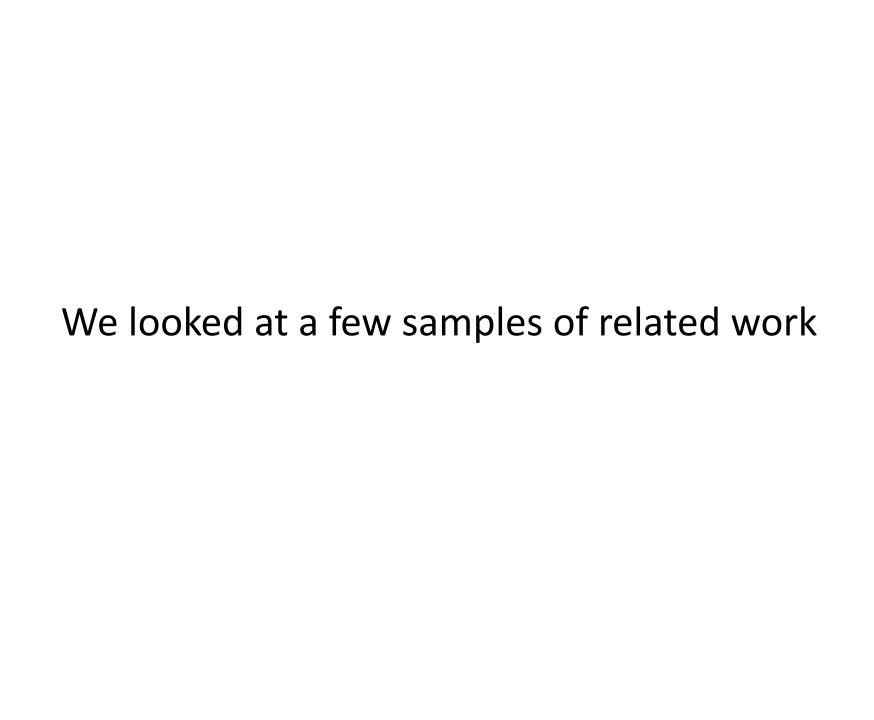
Conclusion

Related Work

Keep it organized

Keep it in groups

 Related your work to the group, to individual work if necessary



The Body of the paper

Depending on the area of work may describe the proposed algorithm, proofs, systems, implementations

Evaluation

Description of experiments and metrics
Results of experiments
Implications of those results

More applicable to the applied areas of computer science.

Conclusions

Not the same as abstract

Short summary of what you did in the project and the implications of the results

Can include lessons learnt and future directions

How do the answers map to these questions to the different parts of a paper?

Types of Papers (mechanical)

Technical Reports

Project description

Research paper

Conference

Journal

Magazine

Find out what type your group and community writes.

Which papers are more important?

Conference

Journal

Magazine

What makes a paper more important than others?

Types of Papers (purpose)

Research Paper

Survey Paper

Tutorial

Technical Report

- E.g., NIST, Other Orgs

White Paper

Vision Paper

Challenge Paper

Citation Format

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There is no standard citation format
Different communities
APA, Chicago, ......
Different conferences/journals
ACM, IEEE, ......
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Learn how to use tools
BibTex
Online Services (e.g., Mendeley)
Demo: Google Scholar, IEEE, ACM
Word
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Citation

Clean! Clean! Clean! (esp. for websites, links, datasheets)

Consistency! Consistency! Consistency!

Examples

1 6th

- Alizai, M. H., Wirtz, H., Kirchen, B., Vaegs, T., Gnawali, O., and Wehrle, K. 2011. Tinywai: Making Metwork Protocol Evaluation Fortable Across Multiple Phy Link Layers . In WiNTECH'1 Hyroceedings of the Sixth ACM International Workshop on Wireless Network Testbeds, Experimental galuation and Characterization
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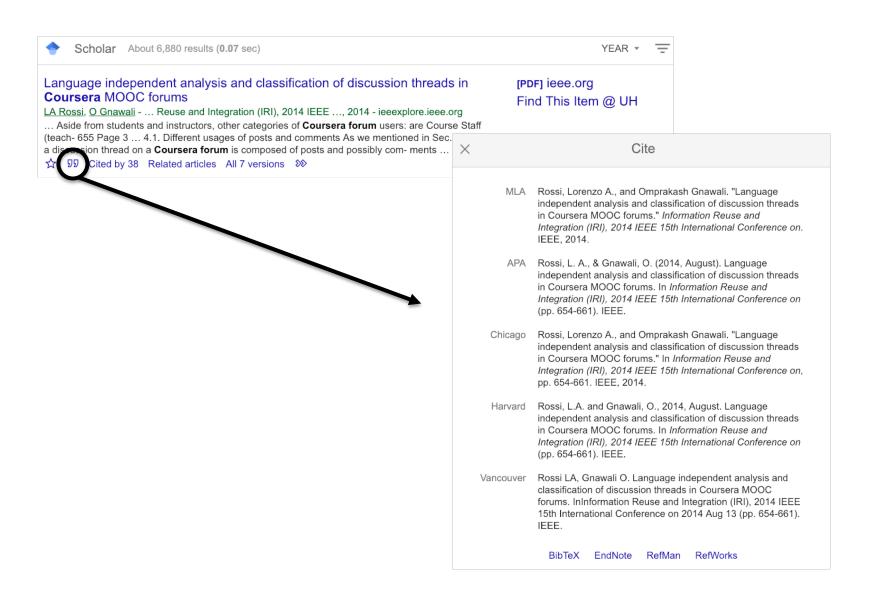
 CHEN, Y., GNAWALI, O KAZANDHEVA, M., LEVIS, P., AND REGEHR, J. 2009. Surviving Sensor Network
- Software Faults. Id SOSP '09 Proceedings of 22nd ACM Symposium on Operating Systems Principles
- CHIPARA, O., LU, C., BAILEY, T. C., AND ROMAN, G.-C. 2010. Reliable Clinical Monitoring Using Wireless Sensor Networks: Experiences in a Step-down Aospital Unit. In SenSys 19 Droceedings of the 8th ACM Conference on Embedded Networked Sensor Systems, ACM, New York, NY, USA, 155-168.
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Citations

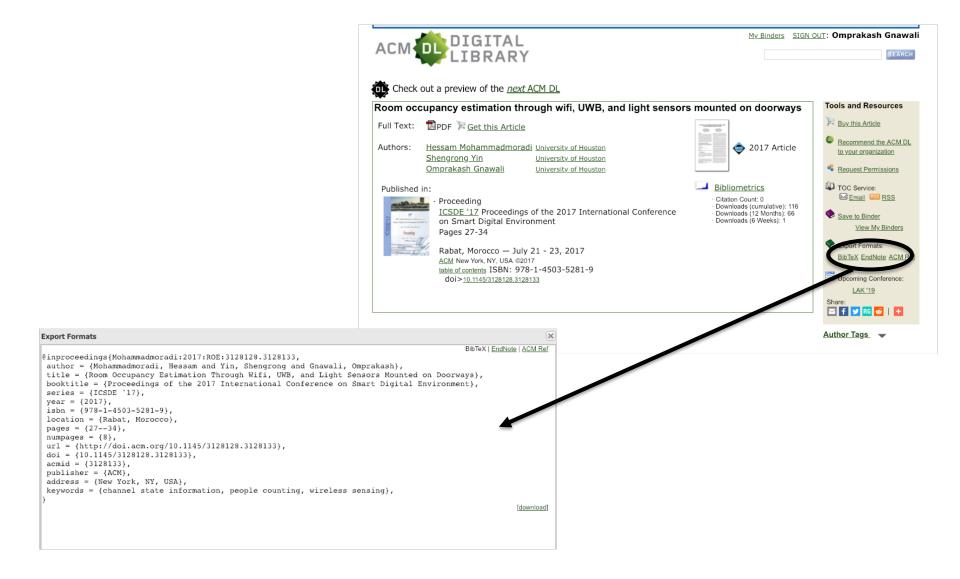
Can take a long time to format citations.

Is it worth it?

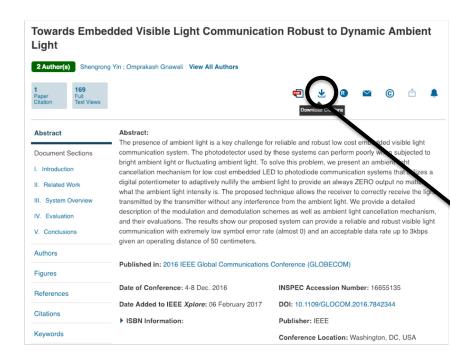
Citations – Google Scholar



Citations – ACM DL



Citations - IEEE



@INPROCEEDINGS{7842344, author={S. Yin and O. Gnawali}, booktitle={2016 IEEE Global Communications Conference (GLOBECOM)}, title={Towards Embedded Visible Light Communication Robust to Dynamic Ambient Light}, year={2016}, volume={}, number={}, pages={1-6}, keywords={demodulation; free-space optical communication; interference suppression; light emitting diodes; optical modulation; photodetectors; photodiodes; dynamic ambient light fluctuation; robust low-cost embedded visible light communication system reliability; photodetector; photodiode communication system; low-cost embedded LED; digital potentiometer; modulation scheme; demodulation scheme; ambient light cancellation mechanism; distance 50 cm; Receivers; Photodiodes; Robustness; Modulation; Prototypes}, doi={10.1109/GLOCOM.2016.7842344}, ISSN={}.

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HW3 – Related Work

Pick 10 "important" papers related to your research

Write two sentences about each work:

Main contributions

Main weakness

Pick one paper and improve the related work section of that paper.