ERSP
UC San Diego
Early Research Scholars Program

CSE 193: Literature Searching

Thursday, Week 3

Mix up your seating and meet someone new.
Sit with people NOT in your group.

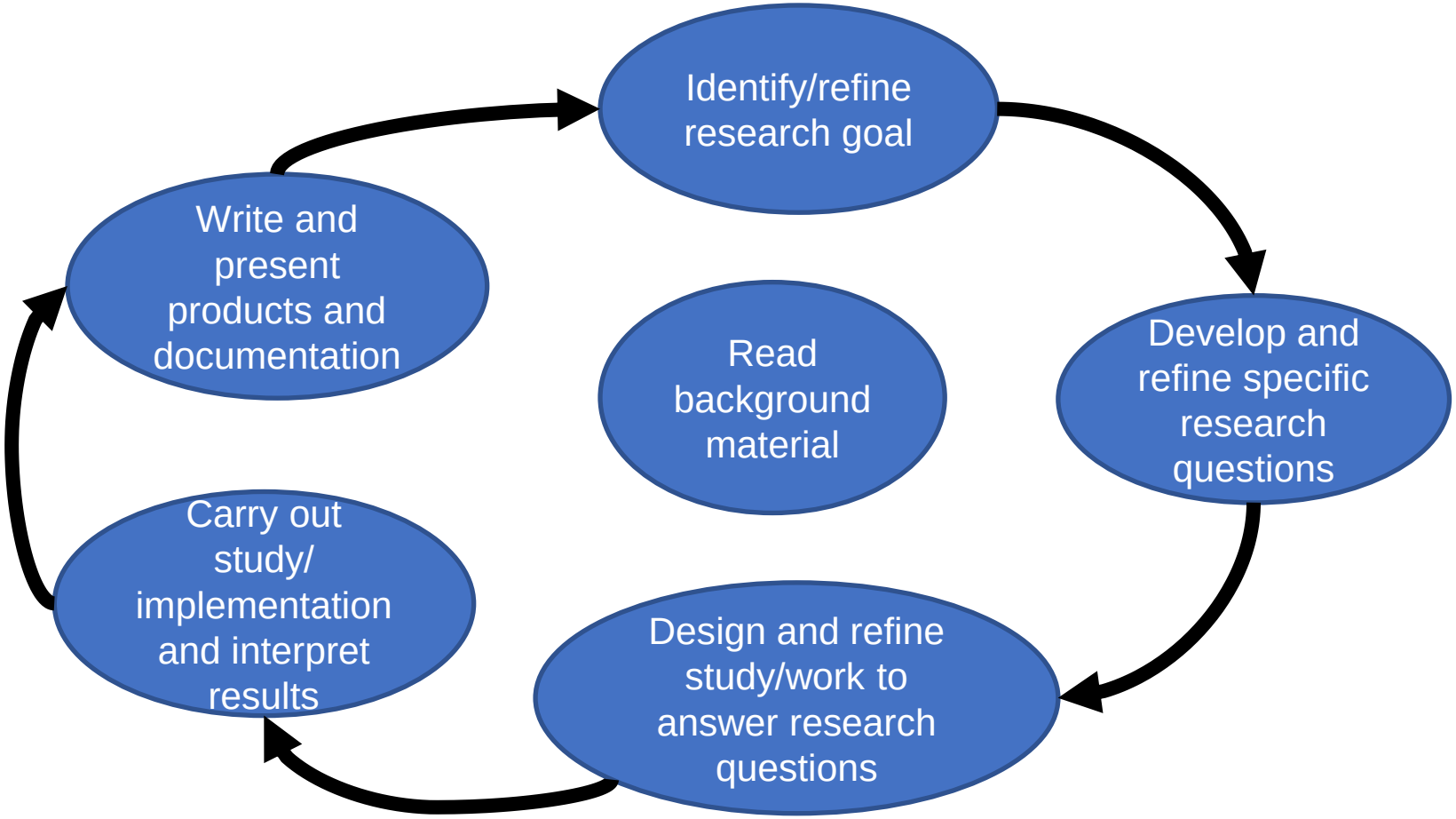
Group meeting reactions

- Together with a RANDOM group of people (NOT those in your group) discuss your reaction to your research group meetings so far. What are they like? How do you feel in the group? What is the best part/worst part?

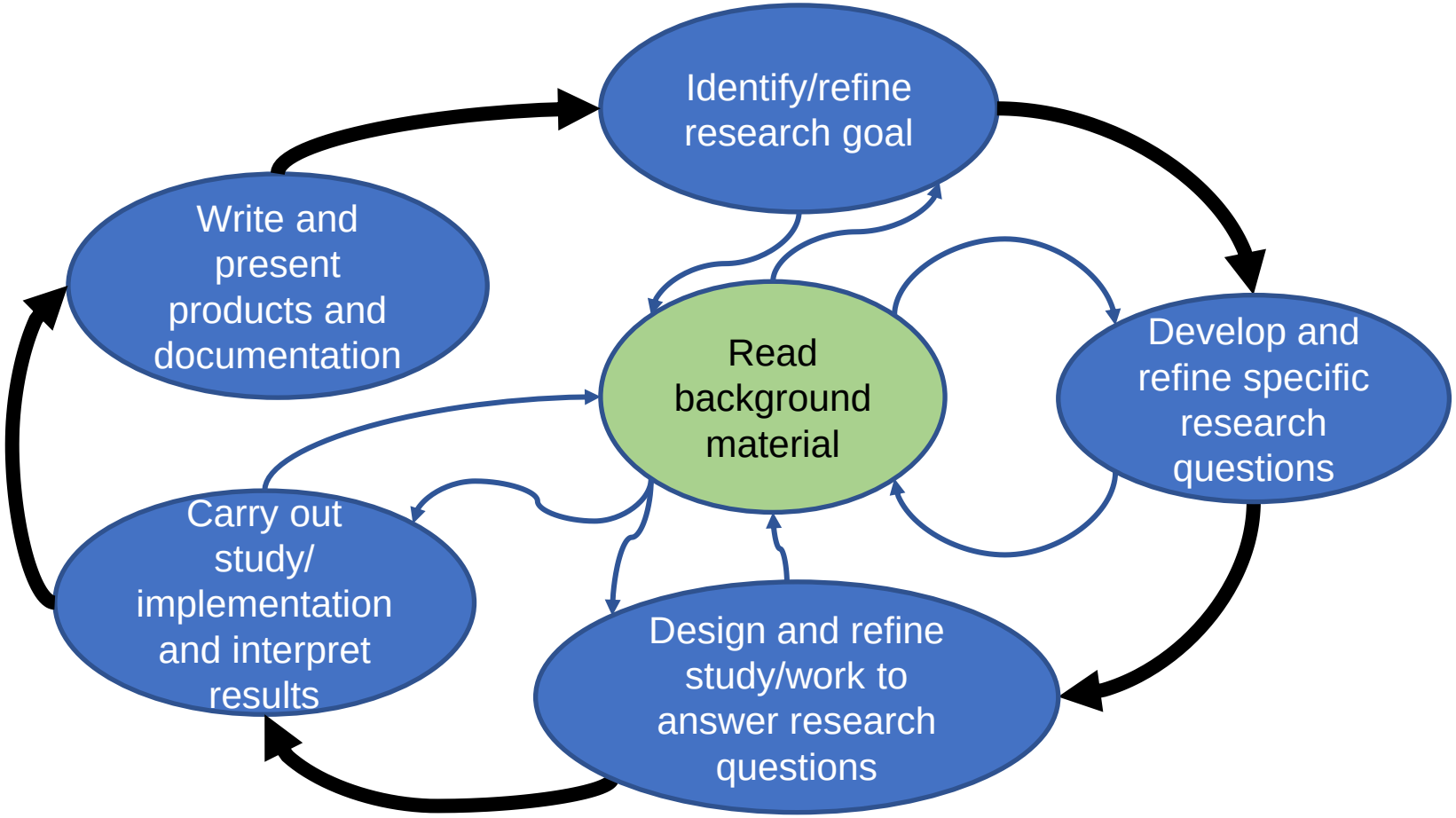
Today's objectives

- Describe important aspects of doing a literature search in computer science
- Perform a literature search in computer science

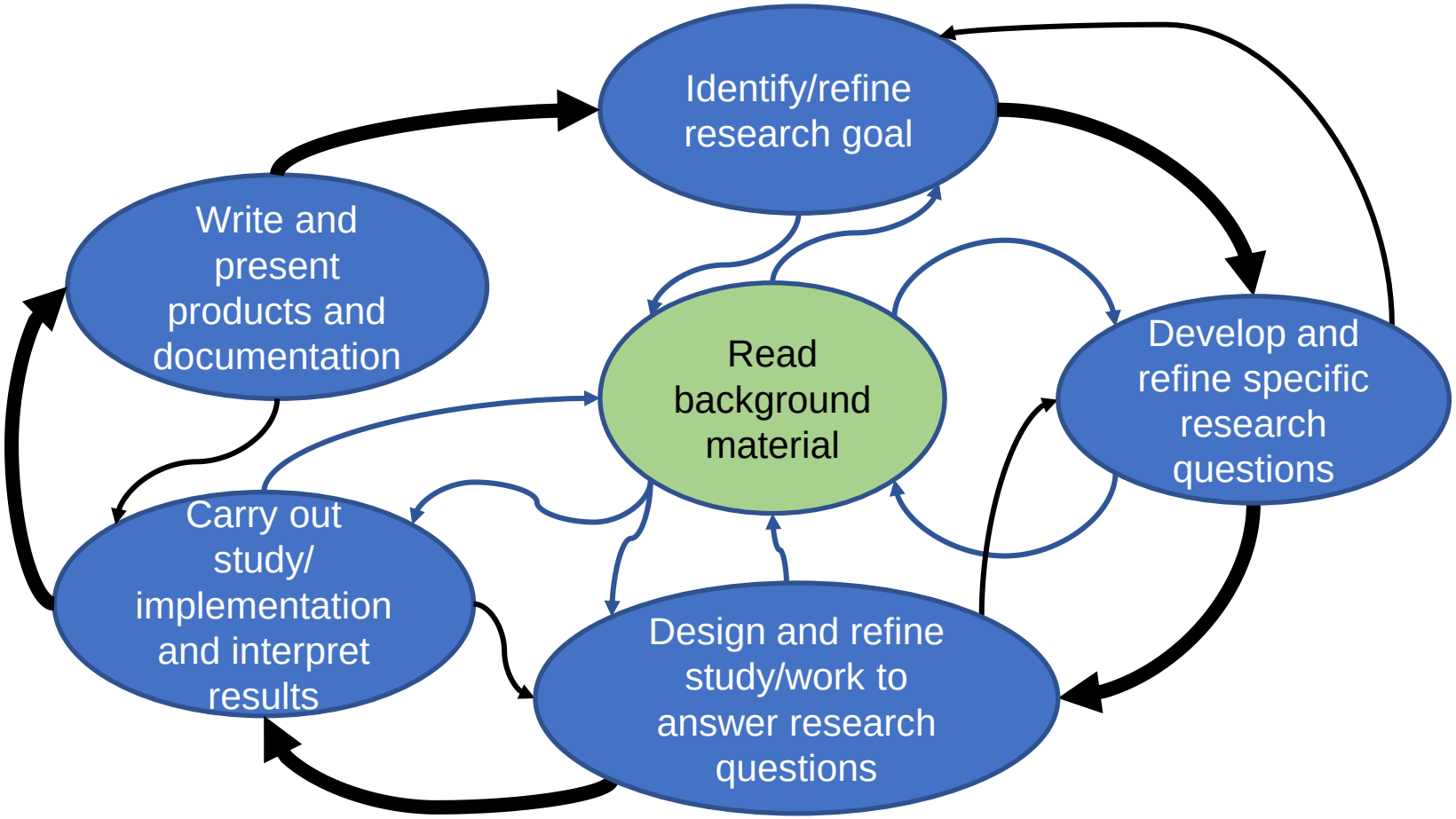
Overview of the research process



Overview of the research process



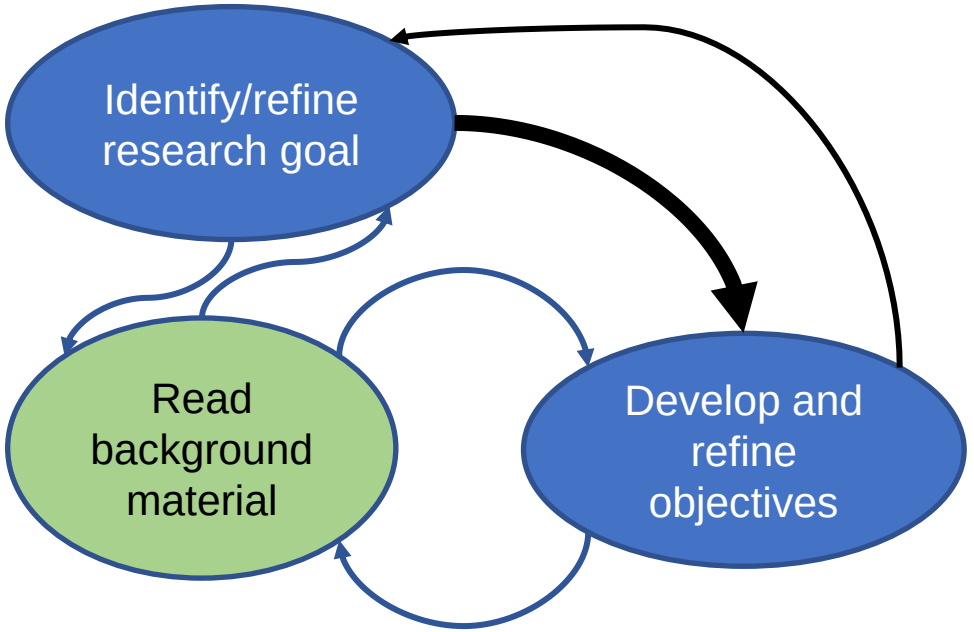
Overview of the research process



Where we are

The purpose of background reading at these two stages:

- **Develop a sense of the research field**
- **Determine which specific objectives are still open problems**
- Figure out what research problems others have addressed
- Learn about technical material you need to understand the research

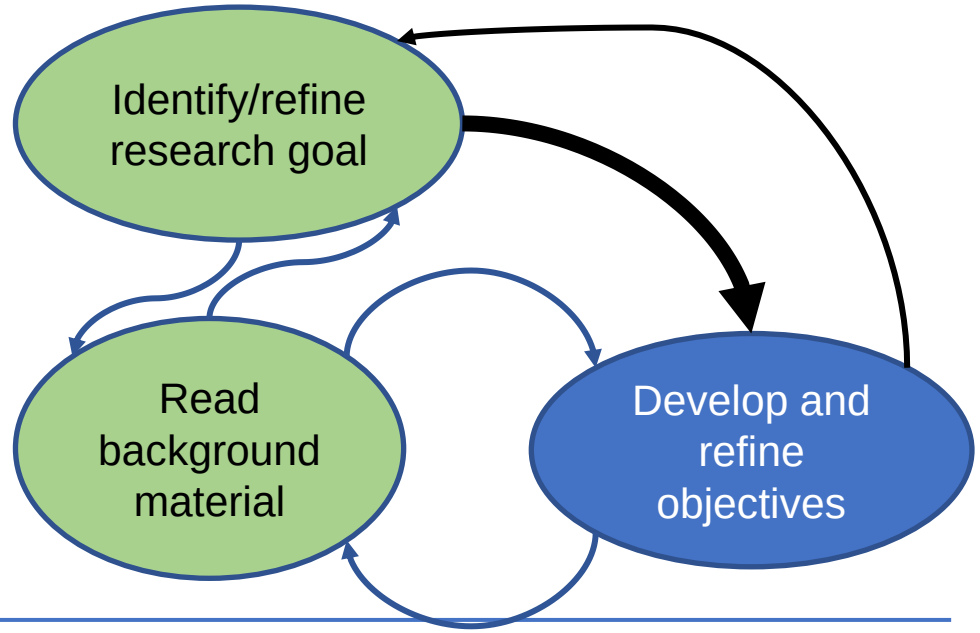


For next week: A Literature Search

- You just read a paper and you have a brilliant idea about a follow-up study/improvement. But has it already been done? Will people care? How do you know?

For next week: Literature searching

- Your goal for next week is to expand out from the paper you have read to get a broader sense of the field. This is a fundamental skill in doing research, and usually the first thing that any researcher in a new area does.
- But how to do this? Google?



Activity 1 (5 mins):

- Identify the passage in the Fine-grained Recognition in the Wild paper that states the problem the paper is solving.

In this work, we study fine-grained domain adaptation as a step towards overcoming the dataset shift between easily acquired annotated images and the real world. To our knowledge, adaptation has not been studied in the fine-grained setting where it is especially expensive to obtain image annotations. In this scenario, many of our categories may be related to one another in some known hierarchical way. For example, multiple distinct car varieties may share the same body type or the same make.

Fine-grained Recognition in the Wild: A Multi-Task Domain Adaptation Approach

Timnit Gebru Judy Hoffman Li Fei-Fei
CS Department Stanford University
{tgebru, jhoffman, feifeili}@cs.stanford.edu

- What other solutions previously existed to solve this problem? Where could you look to find the answer?

Fine-grained Recognition in the Wild: A Multi-Task Domain Adaptation Approach

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2. Related Work

Activity 2 (~15 mins, individual first):

- Read the related work section
- On the Google form (linked from Canvas):
  1. Identify the cited papers that relate most closely to this work
  2. Annotate how each paper relates to this work.
- If you have time, find these papers online.

fine-grained setting. Our work builds on [49]'s method to show that attribute level softlabel transfer and domain confusion significantly boost performance in this scenario.

limited available data. Works such as [33] have used large-scale noisy data to train state-of-the-art fine-grained recognition models. However, these models are unlikely to generalize to real world photos because they are trained with images derived from field guides or product shots. Similarly,

Our method to enforce consistency between attribute and class predictions is similar in spirit to a number of works exploiting label structure [14, 12]. [14] uses Hierarchy and Exclusion (HEX) graphs to encapsulate semantic relations between pairs of labels. We use a KL divergence loss between predicted label distributions instead of hard constraints.

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Seems to be most closely related to the current system. Current work seems to build off this previous work.

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[33] focuses on fine-grained recognition. Provides a basis for the problem studied here: that current approaches fail on real-world data.

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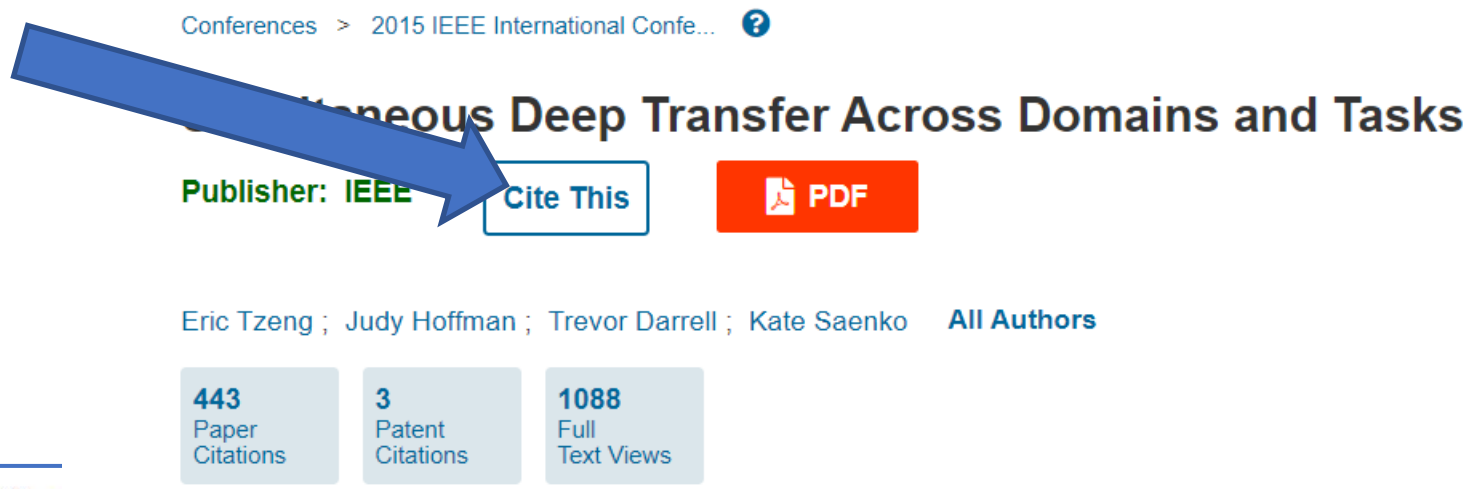
These works use a similar structure for enforcing attribute consistency.

Building your bibliography: BibTeX

- As you find related work that is relevant, enter it into your BibTeX file, with a few sentences in your LaTeX file about how the paper is relevant and what it is about.
- Example: add reference [49] to your BibTeX file



Finding publication venues

[12] L.-C. Chen, A. G. Schwing, A. L. Yuille, and R. Urtasun. Learning deep structured models. In *ICML*, pages 1785–1794, 2015. 2

[14] J. Deng, N. Ding, Y. Jia, A. Frome, K. Murphy, S. Bengio, Y. Li, H. Neven, and H. Adam. Large-scale object classification using label relation graphs. In *European Conference on Computer Vision*, pages 48–64. Springer, 2014. 2

[33] J. Krause, B. Sapp, A. Howard, H. Zhou, A. Toshev, T. Duerig, J. Philbin, and L. Fei-Fei. The unreasonable effectiveness of noisy data for fine-grained recognition. *arXiv preprint arXiv:1511.06789*, 2015. 1, 2

[49] E. Tzeng, J. Hoffman, T. Darrell, and K. Saenko. Simultaneous deep transfer across domains and tasks. In *International Conference on Computer Vision (ICCV)*, 2015. 2, 3, 4, 5, 6, 7, 8

What are ICML/ ECCV/ICCV/arXive??

Where was the original paper published?

https://ieeexplore.ieee.org/document/8237413

Published in: 2017 IEEE International Conference on Computer Vision (ICCV)

Date of Conference: 22-29 Oct. 2017

Date Added to IEEE *Xplore*: 25 December 2017

ISBN Information:

Electronic ISSN: 2380-7504

INSPEC Accession Number: 17453066

DOI: 10.1109/ICCV.2017.151

Publisher: IEEE

Conference Location: Venice, Italy

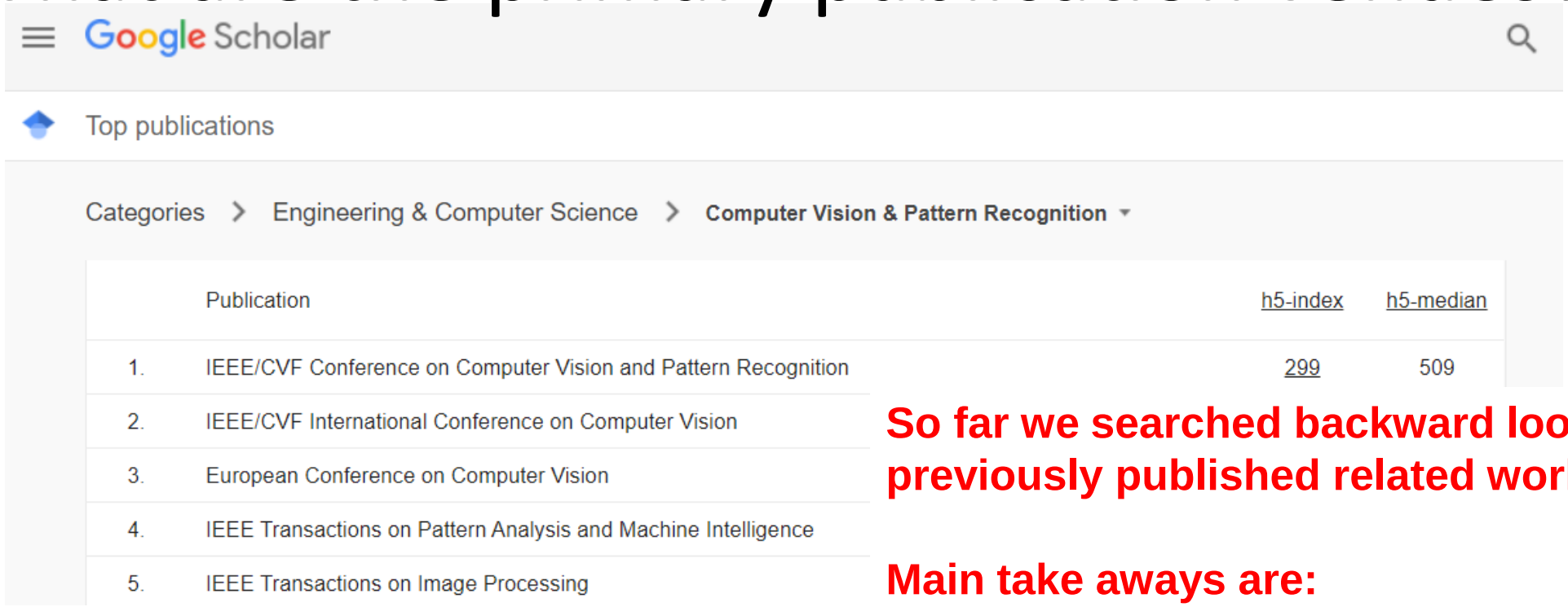
Where was the original paper published?

Activity 3 (5-10 mins, group):

- Find the top five publication venues for Computer Vision and Pattern recognition
- Gauge the quality of this paper and related work based on where they were published

https://scholar.google.com/citations?view_op=top_venues&hl=en&vq=eng_computervisionpatternrecognition

What are the primary publication venues?



h-index

From Wikipedia, the free encyclopedia

This article is about the index of scientific research impact. For the economic measure, see Herfindahl index.

The ***h*-index** is an author-level metric that attempts to measure both the productivity and citation impact of the publications of a and the number of citations that they have received in other publications. The index can also be applied to the productivity and or university or country.[2] The index was suggested in 2005 by Jorge E. Hirsch, a physicist at UCSD, as a tool for determining t *Hirsch number*.

So far we searched backward looking at previously published related work

Main take aways are:

- **How to identify related work**
- **How to gauge the quality of the paper you read and that of related work based on publication outlets**

- What other solutions have arisen since, that solve the same problems? Where could I look to figure this out?

Deep Visual-Semantic Alignments for Generating Image Descriptions

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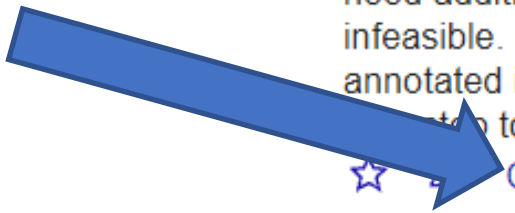
- What other solutions have arisen since, that solve the same problems? Where could I look to figure this out?

Click here



Fine-grained recognition in the wild: A multi-task domain adaptation approach
T Gebru, J Hoffman, L Fei-Fei - Proceedings of the IEEE .... 2017 - openaccess.thecvf.com
While fine-grained object rec
models are unlikely to accura
need additional annotated im
infeasible. However, sources
annotated images for many c
towards overcomin
Cited by 131 Rela
Showing the best result for th

Activity 4 (~15 mins, individual):

- (8 minutes) Use Google Scholar to find the most relevant 3-5 papers that build off of this work. You will need to read abstracts to determine which work is most relevant.
- (7 minutes) As a group, agree on 3 papers to enter into the Google form linked from Canvas.

Sources for finding related work

- ✓ Search backward: What was done before?
- ✓ Search forward: What has built on this work?
- ✓ Search the conference/journal: What's being done and classified as similar by the community?
- Search Databases (Google Scholar, ACM DL, IEEE Xplore, Web of Science, etc) – Must be on campus VPN
- Search the authors: What else are these same authors doing?
  - Aside: Look up your advisor and their research group to get a better understanding of what they do!

Going broader

- Searching databases (must be on campus or use VPN)
  - ACM Digital Library (CSE-specific)
  - IEEE Xplore (CSE and Electrical Engineering)
  - Web of Science (All of STEM)

Activity 5 (if time):

- Choose one of the databases above.
- As a group, use it to look for work related to this paper.
  - What keywords did you use?
  - How easy or difficult was it to manage the results?
  - What are the advantages/disadvantages of using a broad database search?

Lit Search Summary Points (Quality, not Quantity)

- Quality can be measured by:
  - How many others cite the paper/who cites the paper
  - What conference/journal it was published in
  - Who wrote it and how many (quality) papers have they written before/what organization are they at
  - Your own assessment of the work (harder, since you're not an expert). Read the abstracts only.
- Know the important journals/conferences:
  - ACM, IEEE
  - Most fields have a "flagship" conference and/or journal. Figure out what it is.
- Search backward references *and forward*
- Tools:
  - Google scholar, databases (ACM Digital Library, IEEE Explore), Web of Science, raw Google (with care!)

Coming up

- Log updates, Twitter post due tonight, Research group attendance sheet update by tomorrow.
- Assignments for next week:
  - Literature Searching, in two parts