HOW TO READ
AN ACADEMIC PAPER
What we’re going to cover

1. Research process
2. Nature of academic writing
3. Questions to ask
4. About publications
5. How to read a paper
The research process

Understand other people's research → Do your research → Write up your research

Papers
The research process

1. Understand other people's research
2. Do your research
3. Write up your research

Papers
The peer-review process

Paper ➔ Conference or Journal ➔ Reviewer #1 ➔ Reviewer #2 ➔ Reviewer #N ➔ Consensus ➔ Accept, Revise, Reject
The nature of academic writing

papers → surveys → textbooks

postgraduate degree and research

high school and undergraduate degree
The nature of academic writing

papers are not textbooks
The nature of papers

- Good research
- Correct
- Important
- Well written

Poor research
Wrong
Unimportant
Incomprehensible
The nature of papers

- Good research
- Correct
- Important
- Well written

Apply critical judgement
Ask questions as you read

Choose the right papers to read
Questions to ask

- Do I need to read this?
- What are the researchers trying to find out?
- Why is the research important?
- What things were measured?
- What were the results?
- What do the authors conclude and why?
- Can I accept the findings as true?
Why publish?

- primarily to communicate:
  - new ideas and theories
  - solutions to existing and new problems
  - combinations of existing and new components (systems)
  - organise work on some topic (surveys, text books)

- but also (to a lesser extent):
  - for (a sense of) achievement
  - to travel to new places and meet new people
  - to further one’s academic career
  - get well known for your work
Exponential growth of publications

**Computer Vision - CV**
- Publications: 18,672
- Citation Count: 218,721

**Computer Graphic**
- Publications: 19,226
- Citation Count: 163,699
- Stemming Variations: computer graphics, computation graphics, computation graphical, computers graphic, computer graphical
Publication venues

- posters
- technical reports, memos
- workshop papers
- conference papers
- journal articles

- book chapters
- dissertations
- text books
- one can lead to another
  - work-in-progress poster before main publication
  - extended conference paper as journal article
  - etc.
Where to find papers

- Google Scholar
- CiteSeerX
- DBLP
- CVF website (CVPR, ICCV)
- Ke-Sen Huang’s website (SIGGRAPH, EG, EGSR)
- authors’ websites
- institutional repository

- digital libraries:
  - ACM Digital Library
  - IEEE Explore
  - SpringerLink, Wiley Online Library, Elsevier ScienceDirect, …

- traditional libraries:
  - Campus-Bibliothek für Informatik und Mathematik
  - Saarländische Universitäts- und Landesbibliothek (SULB)
  - Deutsche Nationalbibliothek
  - Google Books
Parts of a paper

- title
- teaser
- abstract
- introduction
- related work
- overview
- methods

- results
- discussion
- conclusion
- references
- appendices
- supplemental material:
  - images, videos
  - supporting documents
Parts of a paper (example)

Reconstructing Detailed Dynamic Face Geometry from Monocular Video
[Garrido et al., SIGGRAPH Asia 2013]

28 April 2016
Dr. Dan Casas — How to read an academic paper
How to read a paper (by S. Keshav)

- Suggested approach for efficient reading
- Make up to three passes over the paper:
  1. quick pass:
     - get general idea about the paper
  2. content pass:
     - grasp paper contents, but skip details
  3. details pass:
     - understand the paper in depth
How to read a paper – Pass 1

- quick scan to get a bird’s-eye view of the paper
- decide whether you need to do any more passes
- should take about 5–10 minutes:
  1. carefully read title, abstract and introduction
  2. read headings, but ignore everything else
  3. look at the maths (if any)
  4. read conclusion
  5. glance over the references
How to read a paper – Pass 2

- read the paper with greater care, but ignore details
- it helps to make notes in the margins as you read
- look carefully at figures, diagrams and other illustrations
- this level of detail is appropriate for an interesting paper outside your research speciality
- if you still don’t understand a paper, you can choose to:
  a) set the paper aside
  b) return to the paper later
  c) persevere and go on to the third pass
How to read a paper – Pass 3

▪ the key is to attempt to virtually re-implement the paper:
  ▪ make the same assumptions as the authors, re-create the work.
  ▪ compare your re-creation with the actual paper

▪ this pass requires great attention to detail

▪ identify and challenge every assumption

▪ should be able to identify strong and weak points:
  ▪ implicit assumptions
  ▪ missing citations to relevant work
  ▪ potential issues with experimental or analytical techniques
Remember what you read

- organise papers to keep track of them:
  - BibTeX file: e.g. using JabRef
  - Mendeley: free online reference manager with social network
  - Zotero: free (open-source) desktop reference manager
  - Papers for Mac, iOS, Windows: paid desktop/mobile reference manager

- minimum paper details:
  - authors, title, venue, year, page numbers, keywords, abstract

- write a brief summary:
  - problem(s), solution(s), results, future work
Conclusion

- Papers are used to communicate research
- Don’t expect all papers to be totally correct and well written
- There are different paper categories and venues
- Don’t read them like a text book
- Think when reading
- Don’t get frustrated if you do not understand anything
QUESTIONS?