



HOW TO READ AN ACADEMIC PAPER

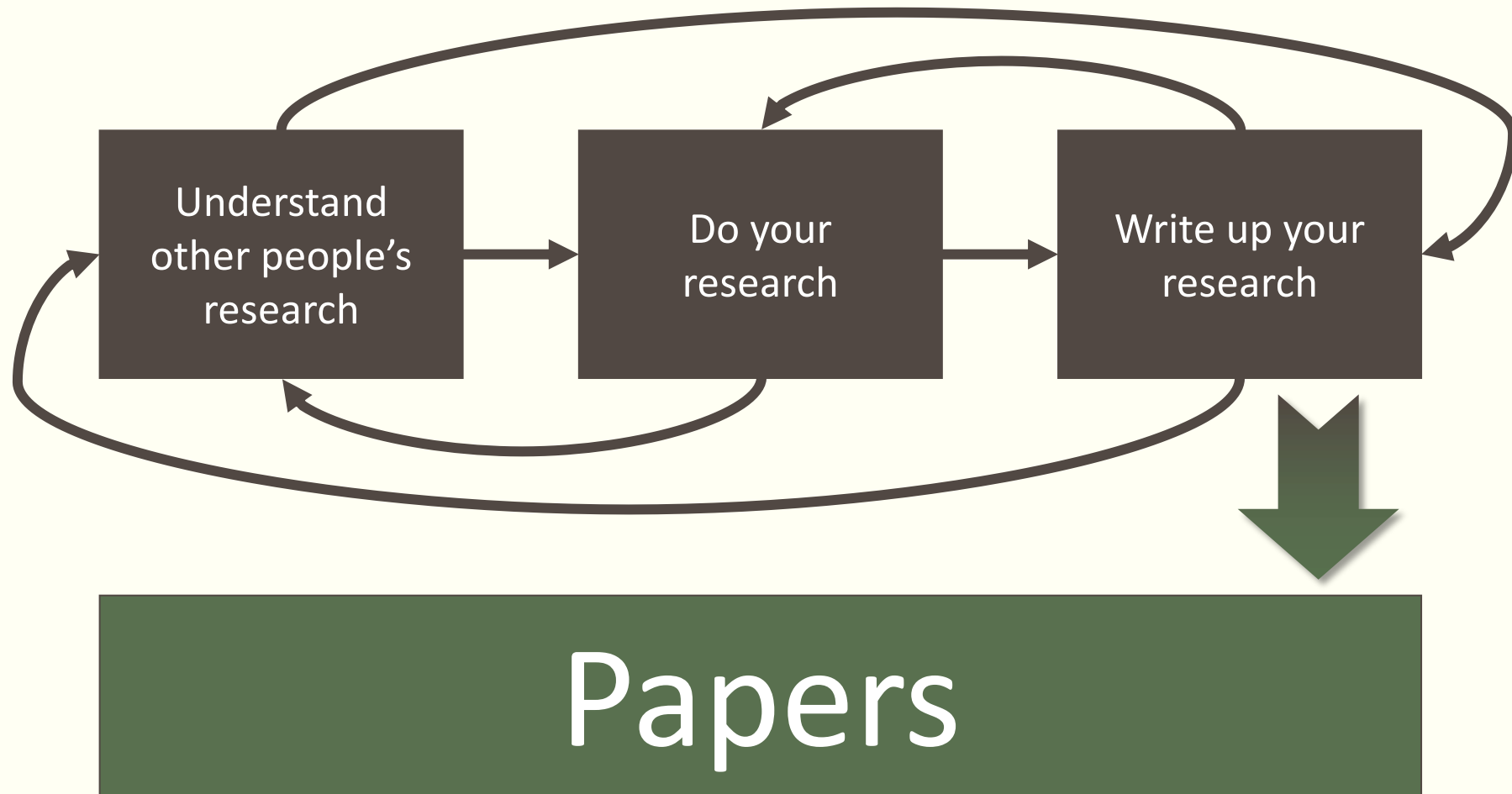
Dr. Florian Bernard
(original slides from Prof. Dr. Christian Richardt)



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

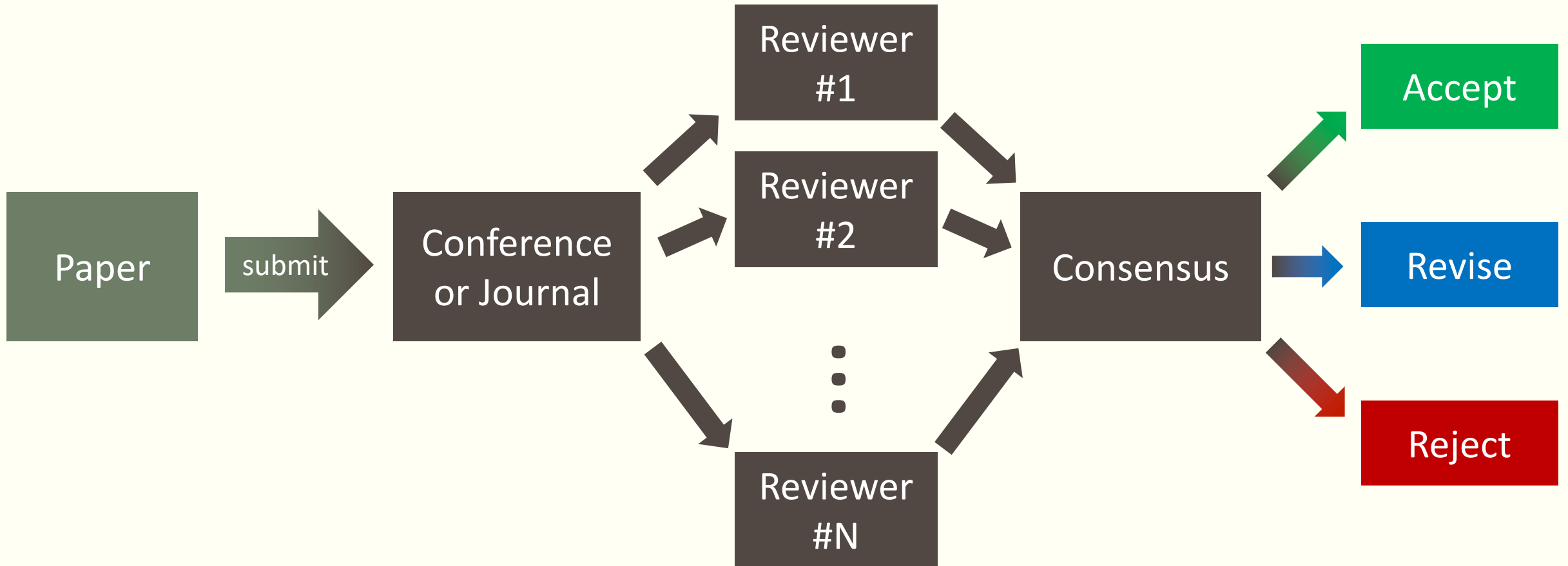
The research process



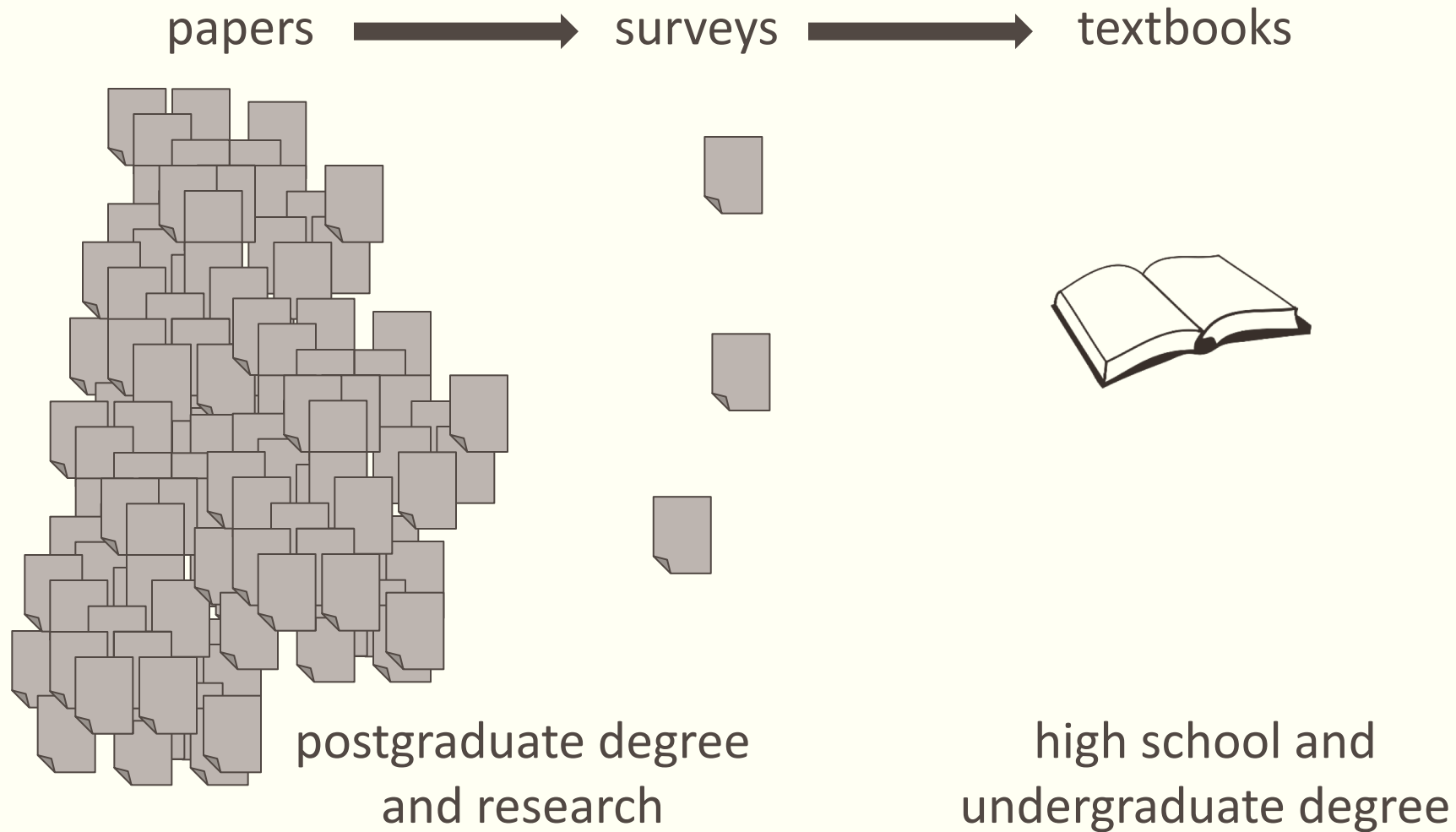
The research process



The peer-review process



The nature of academic writing



The nature of academic writing

papers → surveys → textbooks

**papers
are not
text books**



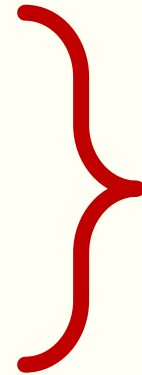
The nature of papers

- | | |
|-----------------|------------------|
| ■ Good research | Poor research |
| ■ Correct | Wrong |
| ■ Important | Unimportant |
| ■ Well written | Incomprehensible |

The nature of papers

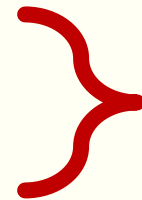
- Good research

- Correct



Apply critical judgement
Ask questions as you read

- Important



Choose the right
papers to read

- Well written

Questions to ask

- Do I need to read this?
- What are the researchers trying to find out?
- Why is the research important?
- 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

Why read papers?

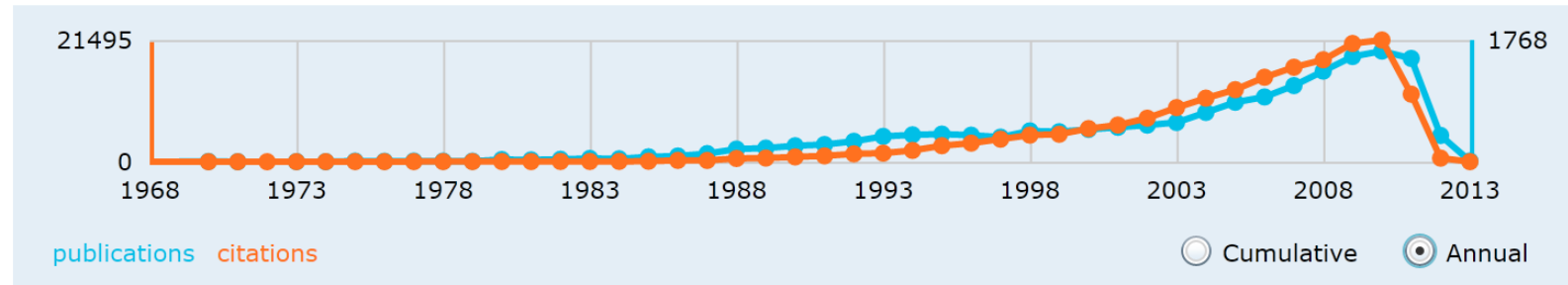
- specific problem to solve
- keep up-to-date with a field
- understand the context of a research area
- help formulate our own research problems
- see good/bad writing and good/bad research
- learn techniques used in a particular research area

Exponential growth of publications

Computer Vision - CV

Publications: 18,672 | Citation Count: 218,721

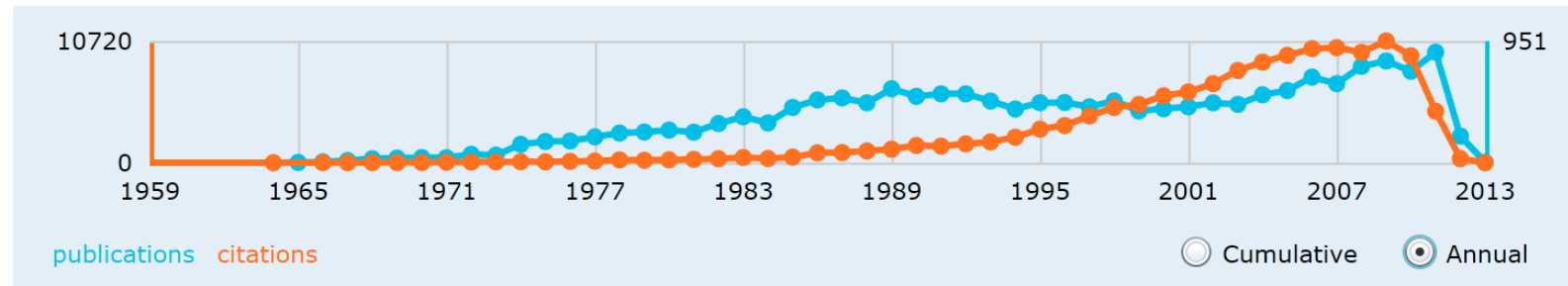
Stemming Variations: computational vision, computer visions, Computing Vision, Computation Vision, Comput Vision



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

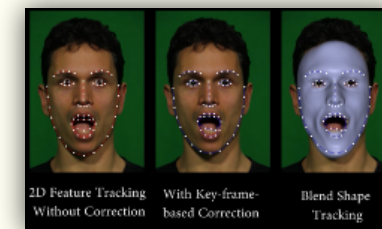
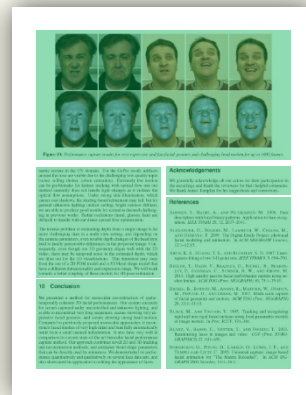
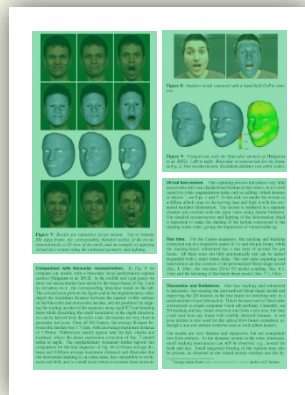
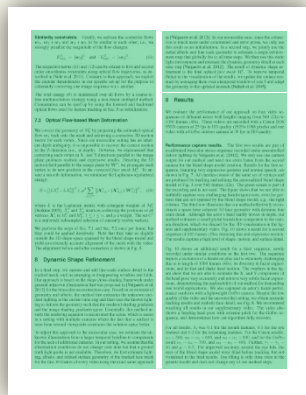
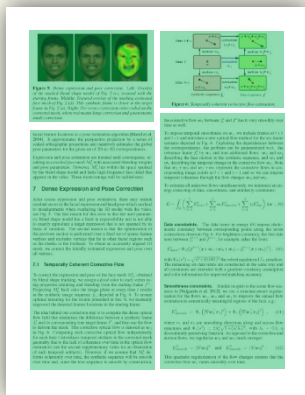
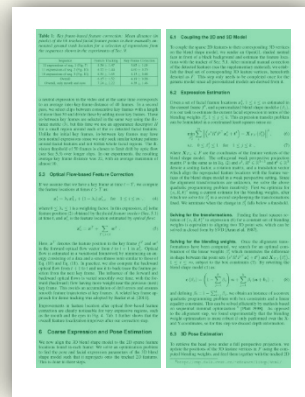
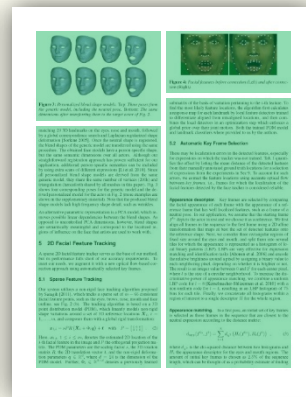
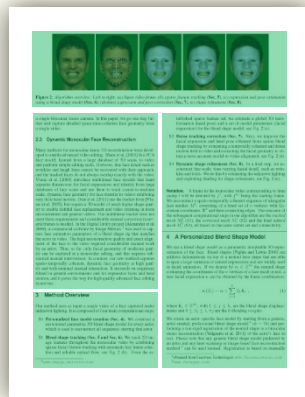
Parts of a paper

- title
- teaser
- abstract
- introduction
- related work
- overview
- methods
- results
- discussion & limitations
- 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]

supplemental document



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

Doing a literature survey

- find 3–5 recent, highly-cited papers using keyword search
- do a quick pass on them
 - to get a sense of the work
- read related work
 - good summary of recent work
- find shared citations and repeated author names
 - = key papers and researchers in that area
 - download & put aside
- go to researcher websites
 - see where they've published recently
 - = top conferences and journals
- go to websites of top conferences
 - look through recent proceedings
 - find recent, high-quality related work
- make two passes through all collected papers
 - add any missing papers that are referenced repeatedly
 - and iterate

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



QUESTIONS?