

Career Seminar

[Week 1]

Vanessa Peña-Araya
(Adapted from the slides by Anastasia Bezerianos)

About me



Inria Starting Faculty (ISFP)



Inria team
<https://ilda.saclay.inria.fr/>

Research discipline:

- Computer Science

Education:

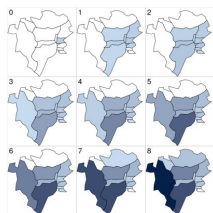
- Eng. in CS University of Chile
- PhD in CS University of Chile

Main research topic:
**Analyzing and visualizing
geo-temporal phenomena**

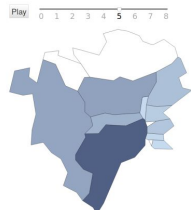
Research interests

(i)

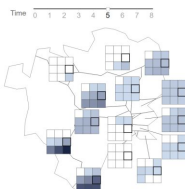
Perception studies



(a) Small-multiple Maps



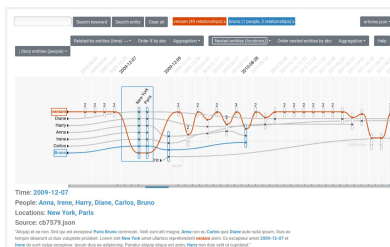
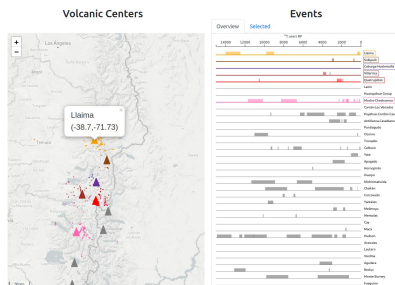
(b) Animated Map



(c) Glyphs over Map

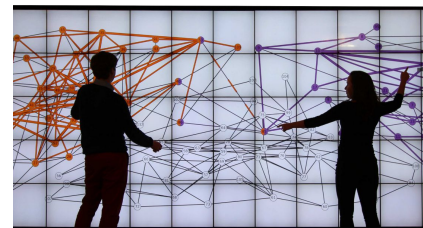
(ii)

Visual analytics



(iii)

Beyond the desktop



Who are you?

Education?

CS, design, psy, business, other? HCI / DS?

Experience

Study, research, industry?

Ideas for the future?

PhD, industry, what kind of projects/companies

What is this class about?

Main Goal

Research? Industry? Startup? Consulting?

Learn **critical skills** that help you develop your career:

- Find, read and critique **relevant research findings**
- Write and present **your own research**
 - Important for final projects or theses!
These should impress, not depress, your advisors!
 - Also relevant to apply to a PhD
- Find a **job in industry**

Course Format

Audience: Masters students

Approach:

- Presentation (Vanessa or Philippe Nataf from [OTECI](#))
- Homework discussion/presentations
- Hands-on activity

Emphasis on discussion, exercises and group/peer learning

This includes handing-in assignments and discussing them

If you need to miss a class, tell us in advance

Practical Information

When: Fridays 09 – 12:00

Where: PUIO E212

Material:

- In ecampus [link to be added]
(lectures, slides, assignment announcements)
- For now: <https://varaya.cl/courses/career-seminar-2022-2023/>

Questions:

- Class Forum in ecampus (or email if necessary)

Any question you can reach me at vanessa.pena-araya@inria.fr

Two main axes

“Academia”

- How to do research in HCI
- Search, read and write papers
- Present a paper

“Industry” (with OTECI)

- Professional project
- Basic tools (CV, cover letter, job offer)

Program

SESSION 1 [09-09-22] - Vanessa

- Reminder of how to do research in HCI
- Read a paper

SESSION 2 [16-09-22] - OTECI (Philippe)

- Profesional project + competences

SESSION 3 [23-09-22] - Vanessa

- Technical writing (e.g. for a paper, your theses)

SESSION 4 [30-09-22] - Vanessa

- Preparing a talk (e.g for your theses, etc)

SESSION 5 [07-10-22] - OTECI (Philippe)

- Tools (CV, cover letter, job offer)
- Social professional networks
- Q/A about the interview

SESSION 6 [14-10-22] - Vanessa

- Evaluation -> giving a presentation

SESSION 7 [21-10-22] - OTECI (Philippe)

- Evaluation -> pitch + CV

About internships

Our professors are in teams that offer a number of internships every year

but also accept students with their own ideas / topics.

Never too early to start looking and contacting.

E.g., ILDA (Interacting with Large Data) <https://ilda.saclay.inria.fr/>

Topics:

- Collaboration using large displays and/or augment reality
- Tangible and gestural interaction, object fabrication
- Information visualization, in particular:
 - interaction techniques for exploration, geovisualization
 - with particular users (neuroscientists, journalists, etc)
 - More in Nov, but if you are particularly interested in a topic, contact us!

Evaluation

- Weekly activities -> 20%
 - Read and summarize a paper
 - Write an abstract
- Read and present a paper (group of 2) -> 35%
- Prepare a pitch + CV -> 35%
- Participation in user study -> 10%

How to participate in a user study?

A list in the following link will be updated every Friday:

- <https://sites.google.com/view/master-hcid-hci/calls-for-user-experiments>

Ask the researcher to explain you about their work

- Why? How? What's the overall context

Don't forget to ask them to send me an email to confirm your participation!

The report (1 page max) should have:

- Research question
- Experimental procedure
- Free comments

Today's session

Today's Agenda

- How to do research in HCI
- How to read a paper

-> We already saw some concepts at the Winter School
(But not all, I promise :P)

HCI Research Process

Get an idea...



... to a paper



HCI Research Process: In Theory

1. Define a problem
2. Read the literature
3. Explore alternatives
4. Propose a plan of attack
5. Develop a solution
6. Validate the solution
7. Publish the findings

Get an idea...



Participatory design & lit.
review to avoid toy
problems

HCI Research Process: In Practice

... things are much more
messy

HCI Research Process

Get an idea...



Participatory design & lit.
review to avoid toy
problems

Develop a theory



Fitts' law, human
perception

HCI Research Process

Get an idea...



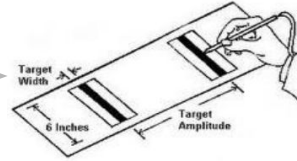
Participatory design & lit.
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problems

Develop a theory



Fitts' law, human
perception

Operationalize



Extract key features

HCI Research Process

Get an idea...



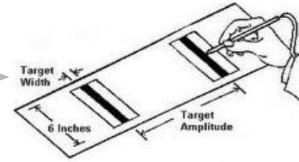
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Develop a theory



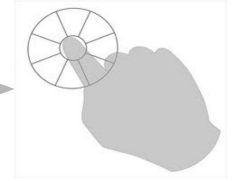
Fitts' law, human
perception

Operationalize



Extract key features

Build system



Develop working
prototypes

HCI Research Process

Get an idea...



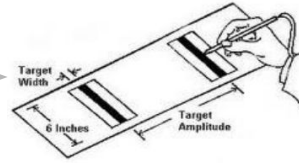
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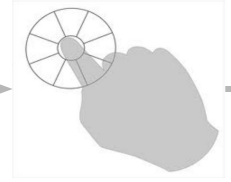
Fitts' law, human
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Operationalize



Extract key features

Build system



Develop working
prototypes

Design experiment



No standard
benchmarks

HCI Research Process

Get an idea...



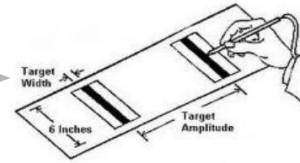
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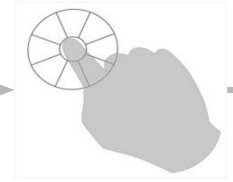
Fitts' law, human
perception

Operationalize



Extract key features

Build system



Develop working
prototypes

Run experiment



Controlled lab studies,
longitudinal field studies

Design experiment



No standard
benchmarks

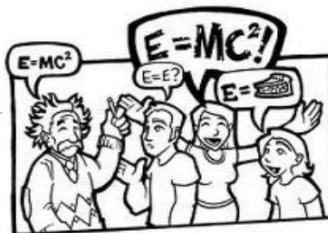
HCI Research Process

Get an idea...



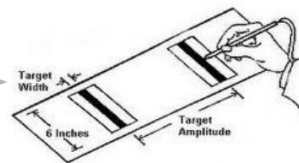
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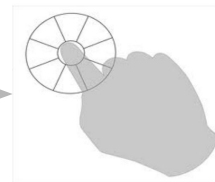
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Operationalize



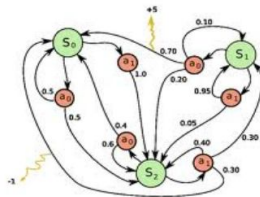
Extract key features

Build system



Develop working prototypes

Run experiment



Quantitative and qualitative

Run experiment



Controlled lab studies,
longitudinal field studies

Design experiment



No standard benchmarks

HCI Research Process

Get an idea...



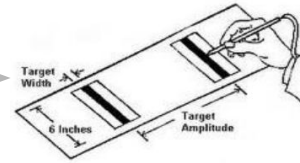
Participatory design & lit. review to avoid toy problems

Develop a theory



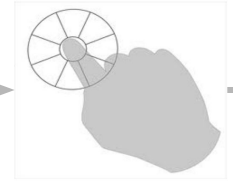
Fitts' law, human perception

Operationalize



Extract key features

Build system



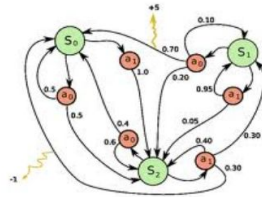
Develop working prototypes

Frame paper



Key insights to generalize

Run experiment



Quantitative and qualitative

Run experiment



Controlled lab studies, longitudinal field studies

Design experiment



No standard benchmarks

HCI Research Process

Get an idea...



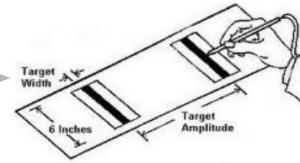
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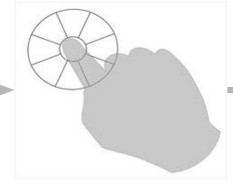
Fitts' law, human perception

Operationalize



Extract key features

Build system



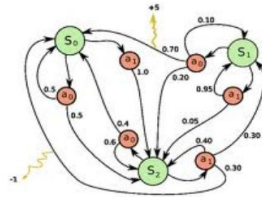
Develop working prototypes

Frame paper

Try to get paper accepted



Run experiment



Quantitative and qualitative

Run experiment



Controlled lab studies, longitudinal field studies

Design experiment



No standard benchmarks

To do research we need to read (a lot)

Why?

To do research we need to read (a lot)

- Find an interesting research question
- Understand or learn about a domain
- Find specific work related to a topic of interest
- Find arguments for or against methodologies, approaches, etc.
- **Position our work among others**

**How do we read
research literature?**

Actually, is not really “literature”

It is **technical**, not literary, **writing**

Each article focuses on making an argument:

- Introduce a problem

- Identify who else has done related work

- Perform an activity **that adds to the field**

- Provide a clear, replicable description

- Justify the results

How do we read research literature?

- Find relevant papers
- Read them
- Organize & link them to generate other ideas
(or justify those that we have already)

How do we read research literature?

- **Find relevant papers**
- Read them
- Organize & link them to generate other ideas
(or justify those that we have already)

Where to search?

Identify the key publications in your field

Conferences? Journals?

Find 'best papers':

What makes them great?

Find influential authors:

Where do they publish?

Where to search?

Some Digital Libraries:

- ACM CHI <https://dl.acm.org/event.cfm?id=RE151>
- IEEE VR <https://ieeexplore.ieee.org/xpl/conhome/1000791/all-proceedings>
- IEEE TVCG & VIS
<https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=2945>
- VLDB <https://link.springer.com/journal/778/volumes-and-issues>
- NeurIPS <https://papers.nips.cc/>

There are much more, of course!

Other tools

- Google Scholar <https://scholar.google.com/>
- arXiv <https://arxiv.org/>
- HAL-inria <https://hal.inria.fr/>
- Connected Papers <https://www.connectedpapers.com/>

How to search?

Structured search:

- Articles cited by a relevant paper
- Highly cited articles
- Ph.D. thesis 'related work' section

Opportunistic discovery:

- Keyword web search
- On-line conference talk or video
- Recommendations
- Browsing authors' or lab web pages
- Browsing journal and conference proceedings

Using a framework

E.g PRISMA-P:

- Terminology: Systematic review, meta-analysis, systematic review protocol
- Protocol to guide the process of conducting systematic review or meta-analysis

Read more here: <https://prisma-statement.org/Extensions/Protocols.aspx>

How does a paper get published?

Peer review:

Other researchers who are experts in a particular area to evaluate a new paper

The process can differ between conferences and journals

How does a paper get published?

Single-blind peer review:

- Authors do not know who are the reviewers

Double-blind peer review:

- Authors and reviewers don't know each other's names or affiliations

How does a paper get published?



In English:

In conclusion, a very bad work, [...], without ideas or original contributions. [...] It's a way to say nothing [...].

[...] I've been weeks wasting my time reading something without value, instead of working on my own work [...].

DO NOT BE LIKE THIS

How does a paper get published?

If you ever **give reviews**:

- Focus on constructive review.
- Try to help your colleague to improve their work
- Do it for them but also to build a good community

If you ever **receive reviews**:

- Do not take it personally -> You are more than your work!
- You can always improve (the work and the writing)
- It's not uncommon for a paper to be accepted after several iterations

How does a paper get published?

Do not forget that science is done by humans!

- In order to improve we need to identify our biases
- We need to be constructive with others
- Ethics!!

How do we read research literature?

- Find relevant papers
- **Read them**
- Organize & link them to generate other ideas
(or justify those that we have already)

There are too many papers to read!

Many papers are interesting...
but you cannot read them all

Skim papers quickly to decide if it is worth reading for
relevant background or related to your work

Read abstract, skim the figures, check references
What are the key nouns and verbs?
What is the evidence?
Does the paper make sense?

Consider how you skim a paper...
should affect how you write a paper

Ok, I found one, now what?

Different ways, multiple times!

First, **skim** it.

Is it worth reading?

if yes, **read** it in depth

Will you cite it? Review it? Use it?

if yes, **re-read** and take notes

Some papers require multiple reads

Ask yourself:

What was their motivation?

research question? real-world problem?
technical challenge?

What is their contribution?

interaction technique? algorithm?
methodology? Infrastructure?
insight about (human or algo.) behavior?

How did they do it?

designed system or algorithm?
developed new theory?
trained a new model? observed people?

How did they justify it?

implementation? experiment?
field study? mathematical argument?
benchmark? theorem proof?
good literature review?

Beyond facts...

What is your opinion?

Key points? Do you believe it?

What questions are you left with?

What would you ask the author?

Does the paper suggest directions for future research?
for the authors? for you?

How does it relate to your own work?
motivation, inspiration, similarities/differences

How do we read research literature?

- Find relevant papers
- Read them
- **Organize & link them to generate other ideas
(or justify those that we have already)**

Archiving and note-taking

As you read more papers, you will forget details

Take notes and archive them in your notebook

Find a system to store research articles!

Develop a clear, consistent naming scheme

For each paper:

Record the reference: author, date, title, publication, pages

Key take-away message: what is relevant to your work?

Additional comments: idea/solution, contribution,
add questions/comments in margins

Write a literature review

“Related Work” = Literature review

Select papers related to your topic, organized by:
theme, methodology, technology or ...

Summarize key points of each paper, according to:
research question, target audience, solution, method

Explain why each paper is relevant and not sufficient

Cite papers correctly

NEVER plagiarize!

If you reuse their words, "quote them explicitly"

Research notebooks:

You should use one!!

Research notebooks

READ	References, Abstracts, Keywords Quotable quotes ... with page numbers
THINK	Ideas, Observations, Problems, Surprises Course insights, Research meetings
DO	Details of: Experiments, Analyses, Procedures Create: Keywords, Highlights, Index
REREAD	Mark Keywords, Highlight, Question Create an index

Always include the date!

Optional Formats

Paper	More disciplined Allows sketching No technical problems (battery/internet) Keep with you all the time
Electronic	Faster typing (for some) Easier to read Easier to search Convenient when already on-line Reusable text (but be careful of plagiarism)
Hybrid	Paper and electronic... but have one that is primary

Organizing our research

Store bibliography

(e.g. Mendeley, Zotero, Papers the app, physical paper, etc)



zotero



Take notes

(e.g. Google Drive, Evernote, Notion, Joplin, Obsidian)



Evernote



OBSIDIAN

My methods

- My old tables
- My new system with Zettlekasten + Obsidian

If you are interested, some videos:

- <https://youtu.be/L9SLIxaEEXY>
- <https://youtu.be/E6ySG7xYqjY>
- <https://youtu.be/ATXERF3MilY>

We all have our own methods! My recommendation: **try, adjust and iterate**

Zettlekasten method to take notes

Atomic pieces of information

written on **your own words**

linked between them

Unique Identifier

201910091801 Struggling when you acquire a skill could be important to become great in your field
#expertise #innovation

Being good at something is not enough to be an innovator:

- Savants excel at their skill without innovating. [[201910091746]] So merely being good at something is not enough to innovate and be creative.
- Self-taught jazz musicians sound more interesting than their peers from jazz music school. [[201910091737]] "More interesting" can entail being more creative, too; Epstein writes about a lot of great musicians being self-taught. [chapter 3] [#epstein2019range]

[#epstein2019range]: David Epstein (2019): *Range. why generalists triumph in a specialized world*, New York: Riverhead Books.

Source: <https://zettelkasten.de/introduction/>

Zettlekasten method to take notes

Atomic pieces of information
written on **your own words**
linked between them

202010271840 Investing for normal people aims towards positiv cashflow
#Cashflow #Liquidity

Investing starts with liquidity: [[202001121202]] You have to have the liquidity to make investment decisions unless you are using other people's money (e.g. using leverage).

But if you have to start with liquidity what is the end of investing? If Cash is the Alpha, Cashflow is the Omega. If you buy real estate, there is no question that positive cashflow is key to a good investment.

The same is true for stocks. Why should we expose ourselves to the uncertainty of the market if we want to support our normal lifestyles.

As an ordinary person, you don't speculate with real estate, but expect it to generate a steady cashflow: You rent it out. There is no reason we shouldn't apply this principle to stocks. Dividend should be necessary.

However, this line of thought should be viewed in the light of the knockout method of investing: [[202001171046]]

Link contexts

The image shows a screenshot of a Zettelkasten note. The note is titled "# 202010271840 Investing for normal people aims towards positiv cashflow" and includes two tags: "#Cashflow" and "#Liquidity". The main body of the note contains several paragraphs of text. Two specific sentences are circled in blue: "Investing starts with liquidity: [[202001121202]] You have to have the liquidity to make investment decisions unless you are using other people's money (e.g. using leverage)." and "However, this line of thought should be viewed in the light of the knockout method of investing: [[202001171046]]". A handwritten note "Link contexts" with two arrows points to these two circled sentences, indicating that they are linked to other contexts in the Zettelkasten system.

Source: <https://zettelkasten.de/introduction/>

Zettelkasten method to take notes

Atomic pieces of information
written on **your own words**
linked between them

Zettelkasten

Workflow

- Zettelkasten als Vereinheitlicher.....[[201706130807]]

Lesen.....[[201704011211]]

- Barbell Methode des Lesens.....[[201709041358]]
- Zwei Mal lesen zum vollständigen verstehen.....[[201711160839]]
- Notizen anfertigen.....[[201709091143]]

Arbeiten in Archiv

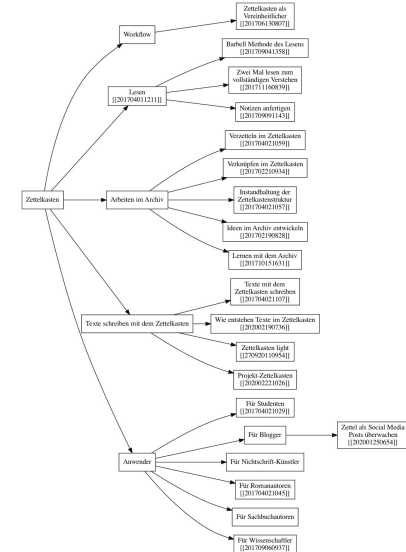
- Verzetteln im Zettelkasten.....[[201704021059]]
- Verknüpfen im Zettelkasten.....[[201702210934]]
- Instandhaltung der Zettelkastenstruktur.....[[201704021057]]
- Ideen im Archiv entwickeln.....[[201702190828]]
- Lernen mit dem Archiv.....[[201710151631]]

Texte schreiben mit dem Zettelkasten

- Texte mit dem Zettelkasten schreiben.....[[201704021107]]
- Wie entstehen Texte im Zettelkasten.....[[202002190736]]
- Zettelkasten light.....[[270920110954]]
- Projekt-Zettelkasten.....[[20200221026]]

Anwender

- Für Studenten.....[[201704021029]]
- Für Blogger
 - Zettel als Social Media Posts überwachen.....[[202001250654]]
- Für Romanschreiber.....[[201704021045]]
- Für Sachbuchautoren
- Für Wissenschaftler.....[[201709060937]]



Source: <https://zettelkasten.de/introduction/>

My methods collaborative

<https://miro.com/>



<https://drive.google.com/>



<https://cirrus.universite-paris-saclay.fr/>

Two assignments for next week

Assignment #0: Start a research notebook (not evaluated)

Create your personal research notebook

Choose paper, electronic or hybrid

For the rest of the term,

Keep track of what you read

Sketch and record ideas

DATE every entry (or not)

Add KEYWORDS to every entry (or make links between them)

Continue to use your notebook for the rest of the semester

Find your own system

Assignment #1: Find and Report on a 'best paper'

Due: before end of Thu 15th Sep (all assignments due on Thu 23:59)

1. Choose a 'best paper' in HCI or DS (at least five years old)

Provide the full reference, using ACM style

2. First skim, then read the paper carefully

Take notes in your notebook

3. Summarize the paper (factual)

What is the key contribution?

What was the impact of the paper?

4. What do you think about the paper? (opinion)

What surprised you?

What did you like best?

What did you not like?

Assignments #2:

All assignments due on Thu night (23:59)

1. Upload your assignment in ecampus

2. We will come back to this on **Session 3** [23-09-2022]

Have the pdf with you during class (eg google drive, dropbox)

- (1) Why both? Trace of your submission (1)

- (2) Share with your colleagues for peer review and learning (2)