

PhD, academic jobs, and all that

Law of Very Small Numbers

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Outline

- ❖ Important general points
- ❖ During your PhD
- ❖ What does the interview look like?
- ❖ What does the job look like?

General points, the PhD

(do good work, publish it, position yourself in the field, get to know people)

KNOW your stuff

What is the last important paper you read about the topic of your thesis?

Everyone think about this: in the last two weeks how many important papers did you read about your topic?

Don't let two days go by without reading

Lowell Wood

America's most prolific inventor

Brainstorms regularly with Bill Gates

Wood attributes his ability to hop from subject to subject, making associations that sometimes lead to inventions, to reading—a lot. He **subscribes to three dozen academic journals**. “I have a terrible deficiency of willpower once I open an electronic table of contents for Physical Review Letters or the New England Journal of Medicine,” he says. “It’s just terribly difficult to pull myself away from them. There will be these three articles that I absolutely have to read before I can turn loose of this thing. If I don’t read them, I’m doomed. I’ll never come back to them because there will be the next day’s journals and the ones after that.”

Be broad

Look at the list of sessions at your favorite conference

How many ring a bell? Perhaps too few?

Who is your crowd?

You need a crowd. Use conferences.

Better yet, use workshops.

Because you're from *some* lab

People will *assume* you can talk about *some* things; for LCAV it could be

Compressed sensing

FRI

Harmonic analysis

Vector space signal processing

You won't get far in a conversation without

Basics of statistical learning theory

A little more than the basics of optimization

Some intuitions about high dimensions

Matrix factorizations

...

How to stay on top of things?

Have a Google Scholar profile, check out recommendations!

Scholar notifications for key authors

arXiv feeds

How to stay on top of things?

Conferences and workshops

Online videos! Fantastic stuff! (And good for inspiration)

Blogs and mailing lists (Nuit Blanche)

Don't feed your brain with junk

Subscribe to high-quality reading

Use an aggregator like `feedly` that also works on your phone; load it with high-quality stuff

I use software to block brain-polluting
Croatian news portals that I'm addicted to

Networking (sorry)

Two different “purposes”:

- 1) scientific collaborations;
- 2) various opportunities

For example, letter writers

Need to know

Who are the important people in your field?

What did they do lately?

What is your opinion about it?

How to get to know people?

“Martin thinks your work is very nice”
always works

What worked for me?

Read the conference technical program up front, find interesting people who do interesting things

E-mail them on the first day of the conference, or a few days before the conference starts; propose meeting in a break or even grabbing lunch

What worked for me?

For journal editors, common acquaintances, people who work on really similar things:

Walk up to them cold turkey

Say “Professor Duck, I just wanted to briefly introduce myself. I’m such and such and I work on X so I’m rather familiar with your recent work on Y. In fact, I really liked Z.”

Finding collaborators

Advisor can help

Follow up work

Joint grant proposals

Workshops

Academic visits

Organize things! E.g. special sessions.

Beware of the predators

Work with people you can learn from

Be careful: there are also “paper autographers”. They will propose to collaborate on a small modification of your result and never touch the pen

Interdisciplinarity is overrated

Not really but...

Work with people who can teach you technical skills in your area

This doesn't mean you have to be a monomaniac

The Interview

The Application

5 reference letters, preferably with positive overtones

Essays on research and teaching

Publication portfolio

“Service” stuff...

Preparing the job talk

The standard is ever higher

There will be people with better results than you

Technical proficiency is not everything but you need to do more than just flash nice pictures

It is becoming crazy

Occasionally TED talks are being put to shame...

Preparing the job talk

Do 2-3 dry runs with colleagues

My first dry run was lamentable...

...but without it there wouldn't be the second, slightly less lamentable one

You want to apply for academic jobs?

Urgently find a way to get teaching experience

The amount of TAing in EDIC is laughable for the purpose (on average)

How about 5 courses every semester? Too much, but I was happy in the interview...

Teaching helps with talks!

Stage fright

Improvisation

Recovering from disasters

Sensing the mood in the room

They want to talk to a colleague

How will you talk to them about teaching?

You need ideas about what and how you'd teach

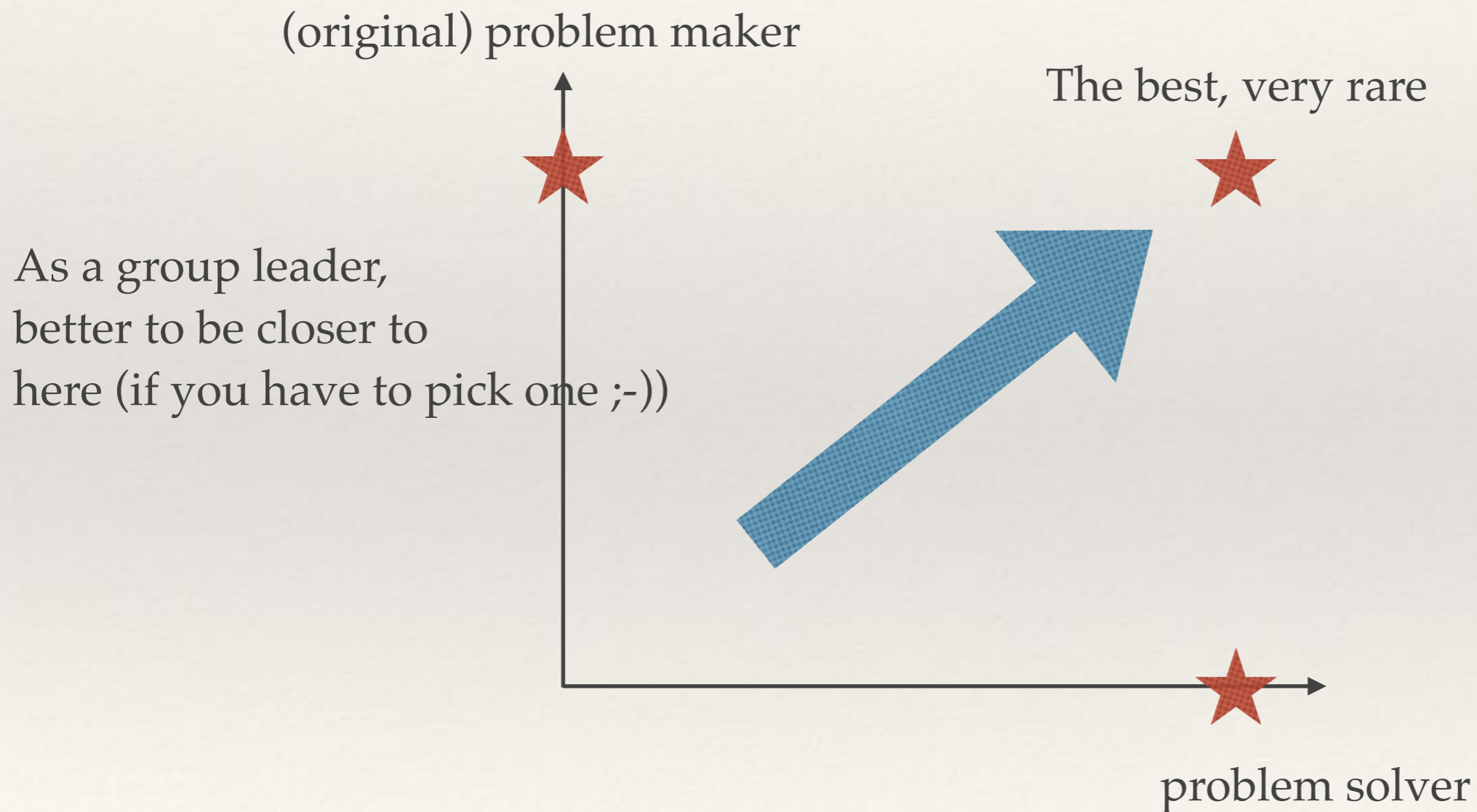
Which textbook? How about reorganizing the signal processing curriculum?

What about research?

During your PhD, what research questions did you come up with? How original are they?

Can you pull out of the hat enough research ideas to feed 2 grad students, a couple of collaborations, and make yourself well-known in the field?

Creating or solving problems?



You're in a good place, use it

In LCAV, say, people get to do it

Not the case everywhere

Teach yourself to be an independent problem maker (cf reading high-quality stuff)

The Job

How is ECE organized at UIUC?

Labs / institutes / centers = buildings

Coordinated Science Laboratory, Beckman institute, Siebel center, ...

Mostly based on collaboration potential

What is it about?

Teaching Course design Research design

Paper writing Grant writing

Hiring students Serving on committees

Advising students Serving on TPCs

Advertising work at conferences

How many research projects

For me, three big topics

~~Audio and acoustics (acoustic geometry)~~

Distance geometry

Learning for inverse problems

Feels like too much but I can't jettison any
without heartache :-)

Once you get hired

People want you to succeed

(Caveat: in Ivy League schools they want you to succeed somewhere else)

You are one of them now, and you're expected to behave like one

What the hell does that mean?

You have to engage in departmental decision making

You will be asked all sorts of funny things

They will want to talk to you like you're a human being, for example about politics.

Better be prepared...

Beware of US political correctness

Tricky if you come from the Balkans

Some jokes leave you hanging...

UIUC/CSL idiosyncrasy?

People are hired **explicitly** on the basis of their collaboration potential.

You better have some...

Hiring from the other side



A single most important numerical feature: number of journal papers / CS conf papers



BUT! “Her one paper is worth ten of his...”

(a single most useless numerical feature in SP: number of conference papers)

Lunches with assistant professors

Very important!

I would have never thought...

I was pretty much tortured by some

You can do some due diligence!

Sometimes people have strong opinions, but more commonly, every opinion counts equally towards a consensus

Many, many applications on file

Step 0: you need to get invited for an interview...

Someone on the faculty needs to know your name and the work you did

Make sure someone knows your name

It's not a walk in the park

Do it only if you like it...

Then it's great!