Semiconductor industry job hunting, in retrospect

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Preface

- What this talk is, and isn't
  - IS: Based on my experience and mistakes I've made. In other words: YMMV
  - IS: Containing basics of job hunting that I was either too embarrassed to ask or too dumb to follow
  - IS NOT: A philosophical treatment of academia vs. industry (see past career seminars)
  - IS NOT: recruiting for, or representing Intel in any capacity

About myself

- B.A. Physics+Math, Grinnell College, 2004
- Ph.D., Condensed matter/scanning probe microscopy, UIUC, 2012, Advisor: Raffi Budakian
- Job hunt:
  - 3 months
  - 3 onsites
  - 3 offers

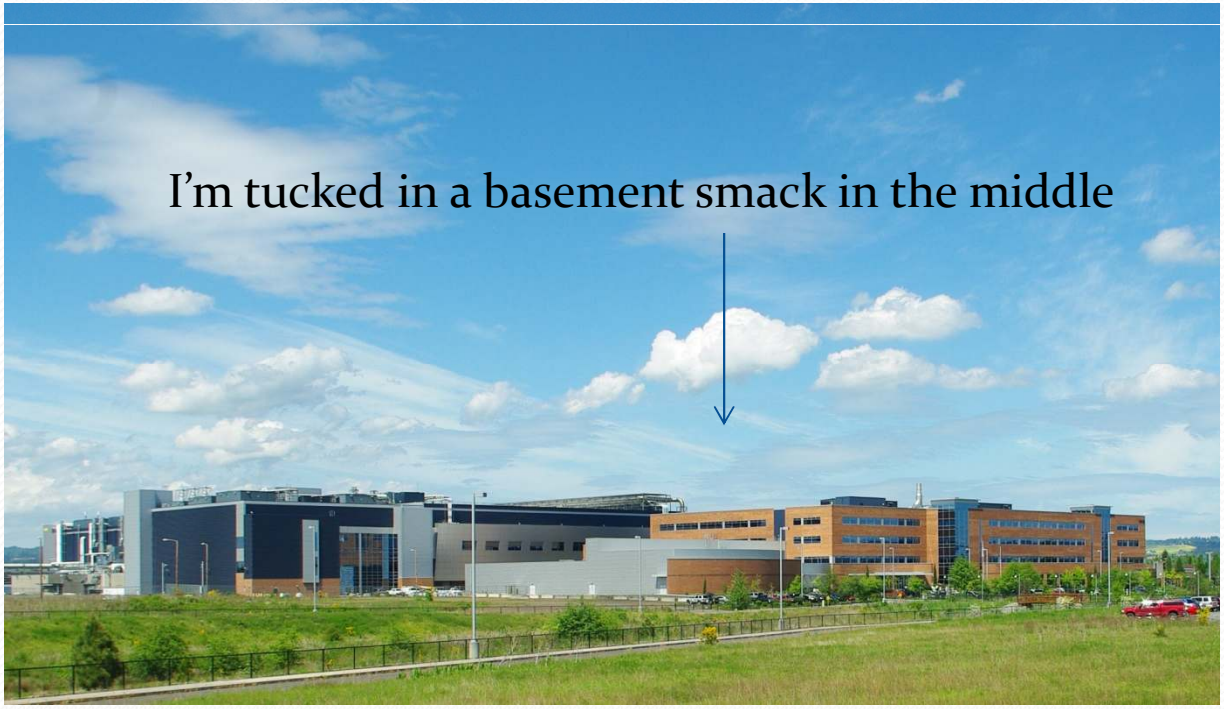
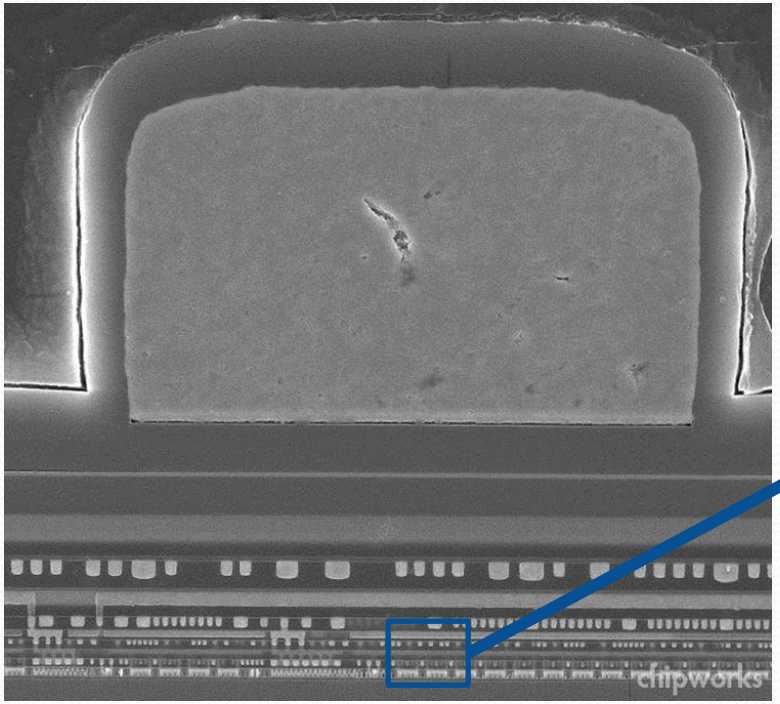


Image source: wikipedia

Failure analysis engineer at IMC

- What I do: new die (new process test chips, cellular baseband, SoCs, etc) not working. Find out what went wrong and why.
- What it's like: imagine a city 1x~50x the size of NYC. Somewhere a bulb burns out or has a short. Go find it. Tools: GPS, flashlight, IR camera, multimeter



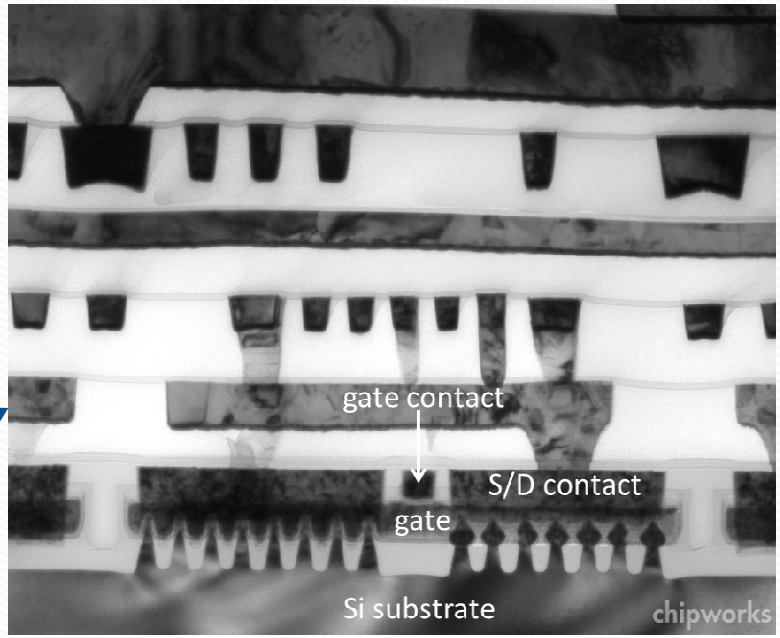
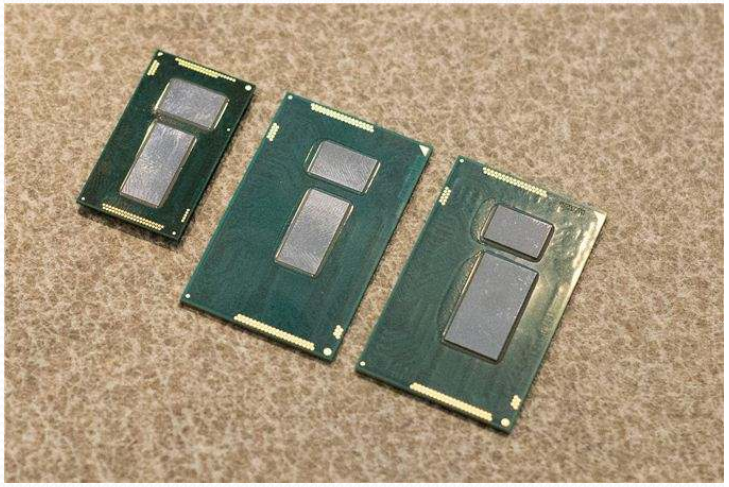


Image source: chipworks

So, why this job?



- My degree is relevant
- Compensation/benefits
- Grand view of chip making process
- Nice boss
- Job is interesting with good work/life balance

And in hindsight:

- I live in the future because a lot of things I work on is months if not years before market (14nm Broadwell was just demoed 10 days ago)
- Downside being none of the chips are really working

Image source: anandtech

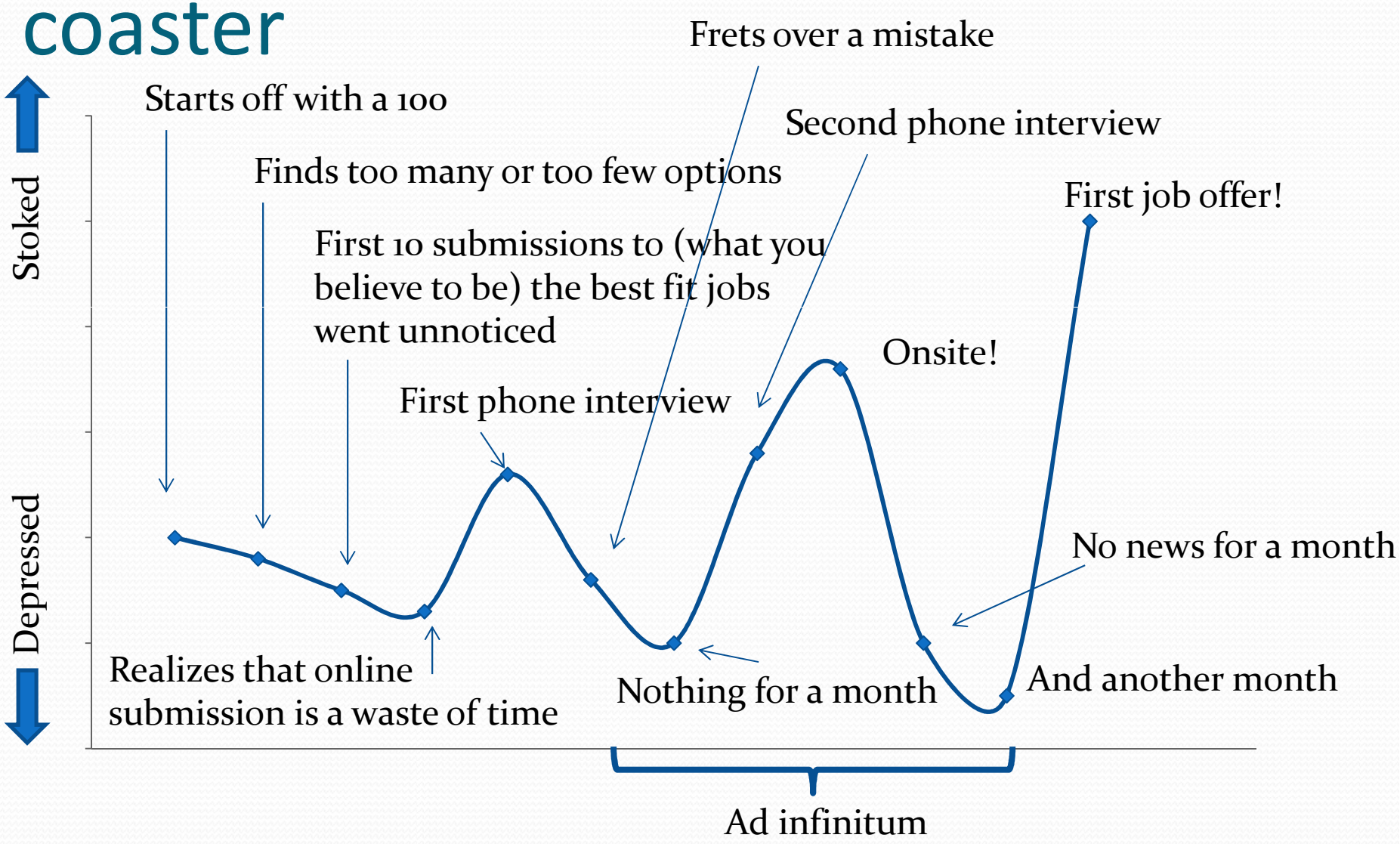
Now let's take a look at the job hunt

- Research
- Turn in your resume
- Your resume gets noticed
- Phone interview
- Onsite interview
- Job offer and negotiation
- Signing up and beyond

First, people involved

- You! You might be referred to as RCG—recent college graduate (oh the indignity)
- The Hiring Manager (HM): the person who has a spot open in his/her team
- The admin: arranges your interviews, travel plans, etc
- Interviewers: HM, your future co-workers, other HM's, your HM's manager
- Human resources (HR): if they contact you, it's probably good news.
- Legal contractors: helps foreign students with immigration issues

Job hunting is an emotional roller coaster



My job research—a few surprises

- Actually, all the job interviews I got were "blind" submissions. I didn't know about the job opening until I was contacted by the HM
- I didn't exactly meet the listed minimum requirement for my job
- Later I learnt that the person writing the job description might not be the actual HM

Qualifications:
You must possess the below minimum qualifications to be initially considered for this position. Preferred qualifications are in addition to the minimum requirements and are considered a plus factor in identifying top candidates. Experience would be obtained through a combination of prior education level classes, and current level school classes, projects, research and any relevant previous job and/or internship experience:

Minimum Qualifications:
Positions are available for MS and PhD in applied physics or electrical engineering with a strong knowledge of device physics or VLSI circuit analysis.

Had to google "VLSI"

Good practices in job search

- Keep job research notes like you do in the lab
- People already in the industry always know more than your keyword search. So find someone and ask
- Where to look: Career fairs, conferences, social networking, company websites, Linkedin, indeed, glassdoor, etc
- Enroll in engineering career services
- Widen your search. It's OK if your resume appears only tangential to the job requirement

“Tangential”, seriously?!

- I later learned:
  - The HM who called me in for the job interview was hiring an entire team. 1/3 of them Ph.D.’s. 2/3 masters.
  - His plan was to get all Ph.D.’s from physics background. Masters from EE/CS.
  - He expected me to have limited device physics/VLSI background

Which begs the questions: why did I get the interview then?

Why physics, why Ph.D.?

- You are stacked against CS/EE/MatSci graduates who likely have directly related experience. Your selling points would be more “intangible”:
  - An engineering job is basically two things. Problem solving and decision making. Demonstrate these two intangible skills through your Ph.D. work
    - End result (publications) is the validation, not the proof, of your skills.
    - How you solved a problem/made a technical decision is more important
  - Demonstrate that you are a learner, that you can grab the basics of job-related skills relatively quickly

Present yourself through resume

- Content
  - Again, emphasize that you solved a lot of problems in *well-thought out ways*
  - For most engineering jobs, skills are a lot more important than publications
- Format: you are fighting for HM's attention
  - Use informative file names
  - 2 pages max. The most important information should be on the first page, top half
  - Cover letters: skip
  - Tailor it toward the job and/or the HM. Use audience-appropriate terms/keywords

The adventures of my resume

Out of the 3 resume that made it:

- 1x contact made during career seminar
- 2x submitted in a career fair
- 0x online submission*

*: The resume I submitted to Intel's career website didn't go anywhere. The copy of my resume that reached my manager was the piece of paper I passed to a recruiter at the 2012 spring engineering career fair.

HOW to submit your resume

- Avoid relying on web submissions
  - If it's easy for you it's easy for everyone else
  - In essence a keyword spam
- The best way to submit is in a career fair (I think the employment expo is coming up next week.)
  - Essentially you resume is already shortlisted because a person actually read it
  - Recruiter can forward your resume to job openings you don't even know about
  - If you talked to the recruiter, that's like getting an interview for free
- Dress formally to be more noticeable

Remember that Ph.D. loving HM? There's more about him.

- He's a physics Ph.D. himself
- He worked in the same field as my thesis
- His manager is an UIUC alum, as is his peer in the lab

So he's not so far removed from my social network. Had I tried, I could've made a connection and emailed my resume to him or his peer, too

How to submit your resume—continued

- Linkedin is a good place to connect with industry insiders
- Extend your social network, especially through alumni, and get internal referrals
  - If you get the job, referrer gets a bonus, too. Win-win
- Treat online fill-a-form submissions like lottery tickets. Really cheap ones

Interview preparations—my experience

In chronological order:

- 1 cold call onsite—no phone interview. didn't know the job I was interviewing for until I stepped into the interview room. Researched the entire business unit-their goals, operations, tools, methods.
- 1 full suite (phone+onsite). Researched every word of the job posting. TIVA? LADA? Device physics? VLSI?
- 1 full suite. I'll save this for later.

Before an interview

- More research into the job! You should have a reasonably good guess as to what the job involves.
- Check glassdoor for job and company background
- Check h1bwage.com for wage and visa sponsorship stats
- Prepare for the questions, but also prepare questions
  - Every item in the job requirement list
  - Every technical term in the job posting
  - Everything you write on your resume—learn to engage non-physics people in a conversation about each item
  - Have all your support material—a portfolio—ready to go
  - List questions you have about the job

First contact: phone interview

- Dress up can help, even for voice-only calls
- Ensure voice quality. Avoid VOIP and IP phones (e.g. google voice). Wired headset over Bluetooth
- Be interactive. If you appear uninterested in the job, you won't get it.
  - DO: ask questions. It's an interview, not an interrogation
  - DO: send thank you notes and express interest

- For international students: they may ask your visa status and nationality, and this is because of export control issues. *Answer truthfully*.

How long is the wait?

- Write down your notes then **MOVE ON!**
- If no news in 2 weeks, email the hiring manager or your point of contact, express interest in the job
- If—and only if—you have standing offers, you can press further for a fast decision

Contact of the third kind

- What it is: Multiple 1 on 1 interviews (1-n /n-1 also possible). Presentation of thesis work. Workplace tour.
- What to wear: Unless explicitly instructed otherwise, suit and tie
- What to bring: your laptop. On sleep with your portfolio open
- What you will be doing: talking all day about yourself
- But don't forget: learn about the job, the workplace, the co-workers, the manager. You'll spend more waking hours with them mon-fri than with your spouse!

My onsites

- I was asked, in a 4.5:4.5:1 ratio, about:
  - my resume
  - how I'd handle a technical problem related to the job
  - how I'd handle interpersonal situations ("behavioral")
- First onsite (went in blind)
  - Mostly about my resume
  - Unpleasant questions during presentation
  - Questions I couldn't answer. Interviewer response: glad you didn't bullshit through
- Second onsite (my job now)
  - Mostly about the job
  - Device physics/Circuit analysis
  - Asked interviewers tough questions
  - Great learning experience—demonstrated being a good learner
- Third onsite: save for later

Tips for onsites

- If you know the interviewers, research them, too
- Your thesis presentation forms the backbone of your talks in an onsite throughout the day. APS meeting presentation/thesis defense are good starting points. Tailor it to the audience, then practice, practice, practice
- Remember the intangibles. You are not presenting a paper
- Make a portfolio—documents, images, photos that you can pull up in about 10 seconds on your laptop/phone to show off your work. Think mini-presentations.
- As much an opportunity for them to learn about you as you them
- Offense is the best defense. Ask them hard questions.
- Don't bullshit. Seriously

Job offer

- Exceptional candidates get offer within days. Otherwise company will keep interviewing and it can take weeks
- Offer will come in email or snailmail. NO OFFER is official until then!
- HR will contact you by phone to explain the offer and to answer your questions
- You have to make a decision in about 2-4 weeks. You can ask for an extension—this is typically HR discretion
- "At will"=fire at will. "exempt"=salaried, no clocking
- Always ask for a raise or sign-on bonus. HR will forward the request to HM. The worst they can do is say no.
- International students: ask HR for confirmation about H1b and green card sponsorship, again.

Remember that third interview I didn't talk about?

- Interviewer contacted me after I already got an offer. Agreed to hold off decision until I finish interview
- Toughest interview schedule by far, 1:1's, 1:n's, 12-hr day. Half a dozen managers. Corp VP.
- Didn't sweat it because of standing offer
- Got the fastest and biggest package

Tipping the balance with a standing offer

- From now on you will have more confidence in subsequent interviews. Relax, and you won't make as many mistakes.
- An "offer in hand" is also an important bargaining chip in future offers, use it for better pay, sign-on benefits, faster decision time, etc.

But…

- I didn't take that late offer, even though it was the largest by sum, location and people are great
- Why? Important considerations on job offer
  - Where do you want the job to take you?
  - Job security
  - Living cost
  - Salary vs. bonus vs. RSU
  - Travel
  - Work/life balance, vacation time
  - Manager

You got a job! Happily ever after?

Nope.

My adventure:

- Export control issues delayed start date
- Almost lost job because of it!
- Spent months locked out of the lab, doing intern chores (but got paid as full time employee, so can't complain)

The end game

- Negotiate a graduation timeline with your advisor, stick to it
- Negotiate a starting date with your manager
- International students: get started with export control and OPT and bug them until you get the document
- If your start date is still far off, stay in touch with your manager
- IP is a serious matter in private sector, so be careful what you say, what you download, and what you listen to

Thank you and good luck

- BTW, enjoy your grad school while you can.
- “If you think your advisor is tough, wait until you get a boss.”
- Will be in Loomis 281A from 1pm to 2:30pm to answer questions.