

Career Paths and Possibilities



Thanks to Zach Dodds & David Reed
for amazing previous slides



My Path [:college]

- Elementary School
 - Created tests, responded, and then graded them (no joke)
- Middle School
 - Taught my first CS class (QBASIC)
- High School
 - Taught CS during lunch to students competing in ACSL (national contest)
 - Started a consulting business



My Path [college:northeastern]

bitX solutions

1998-2009

BitX Solutions, Inc. Founder & President

- {.gov .edu .org .com} x {desktop web mobile}

NC STATE
UNIVERSITY

2002-2006

NC State. BS Computer Science

- TA + RA; mentor: “you should go to grad school”



2006-2012

U of Michigan. MS/PhD Comp Sci and Eng

- TA + RA (DBMS + AI), PFF, grad-student pres., teaching in Tanzania



2012-2014

Disney Research. Postdoctoral Associate

- Machine Learning, Optimization, Robotics



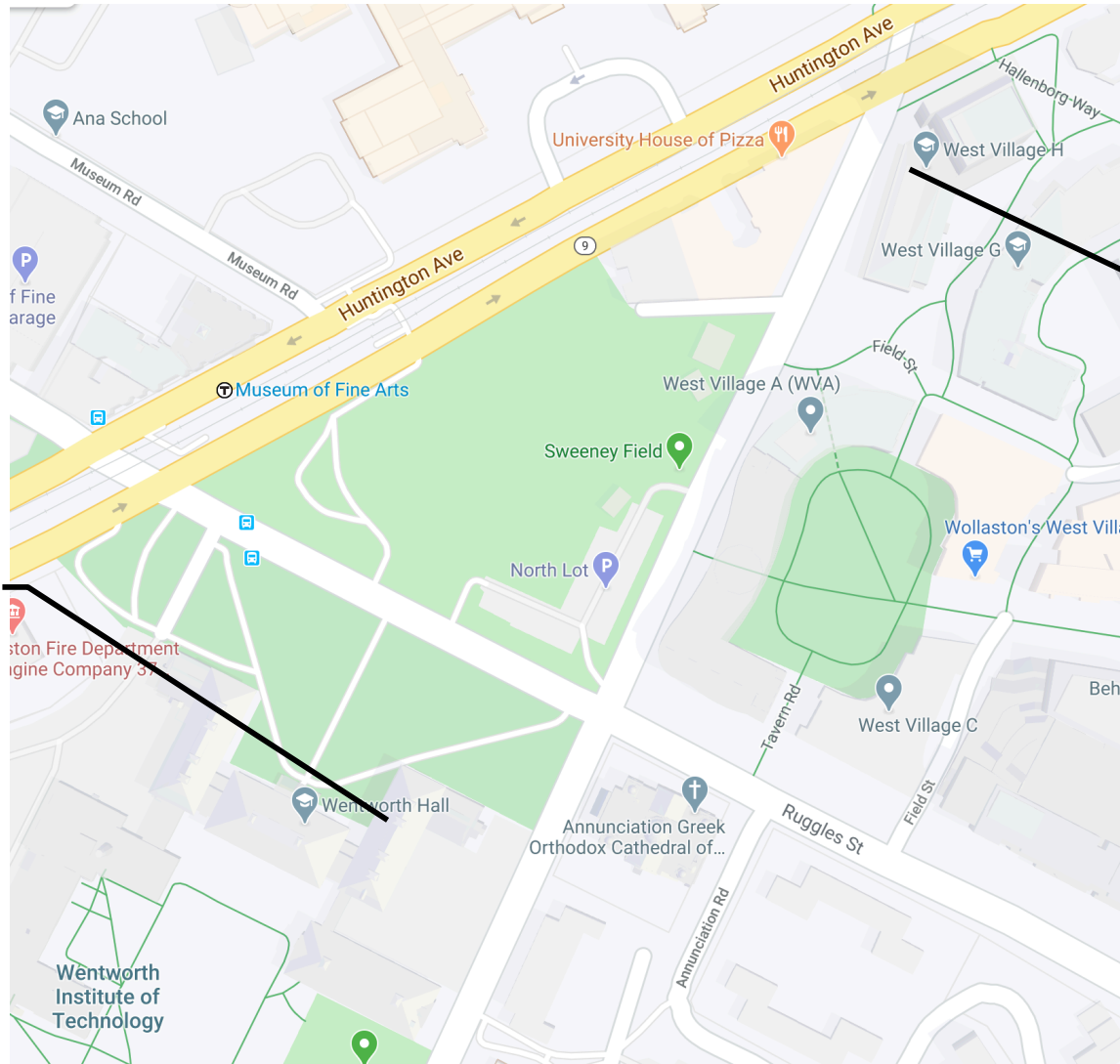
2014-2017

Wentworth. Assistant Professor

- Inclusive CS (access), service learning



Wentworth -> Northeastern



WIT Office

NU Office



My Path [northeastern]

Associate Teaching Professor

- Nominal 6-course load -> 4
- Research active (-1 course): ML/AI; grants, UG/G RA's
- Service: UG curriculum (College/University), Teaching Faculty policies, CIC, AAAI UC, EAAI co-chair

Director of Teaching Faculty (-1 course)

- Chair of hiring committee
 - **I am actively hiring – talk to me!**
- Oversee evaluation, promotion, support/mentoring
- >30 faculty in Boston, and actively collaborate with faculty/administration at SF/SJ, Seattle, Vancouver, Toronto, Portland (ME), London



WIT-NU: Comparison

Wentworth (Faculty @ Teaching Univ; 4.5K UG, 134 staff)

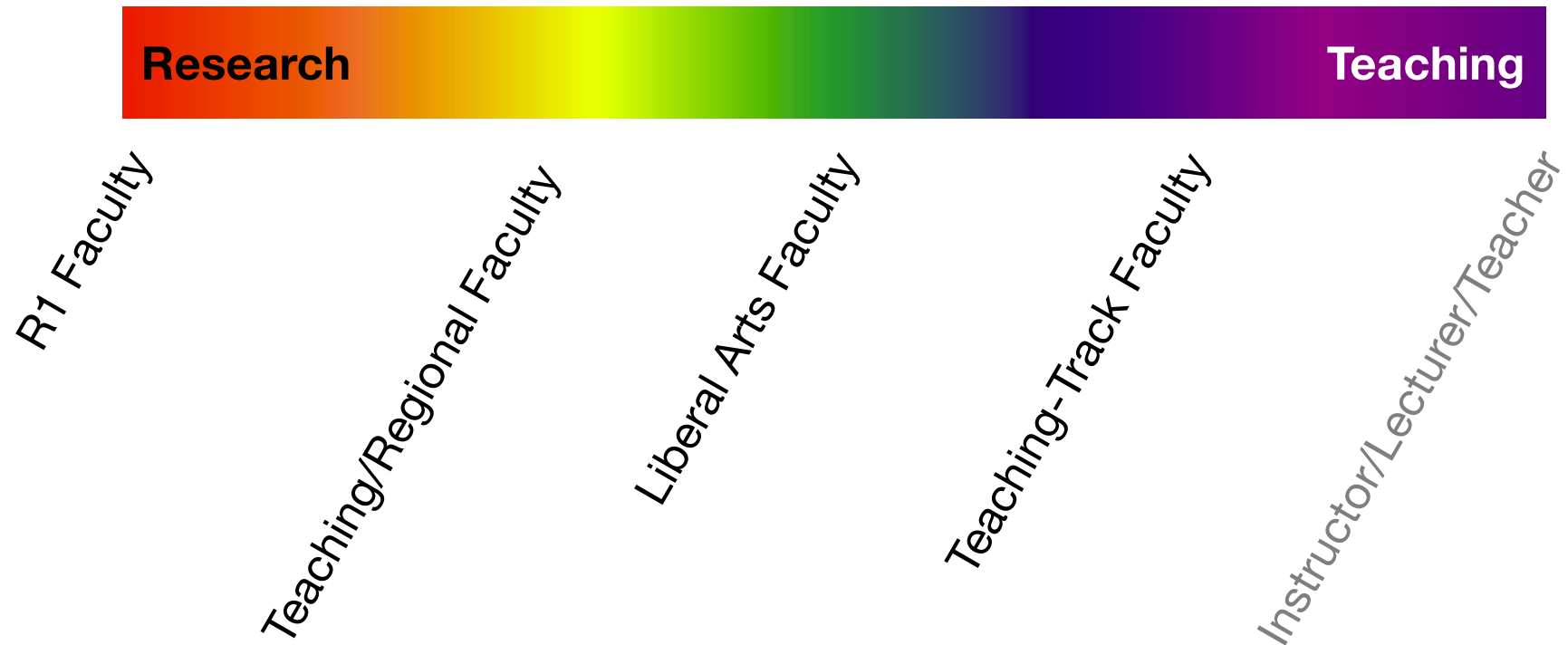
- 30-student classes, no TAs
- ~80 advisees
- Research expected, minimal time/support
- ALL the service (quantity)
- Admin != Faculty
- “Tenure” via union
- Creating courses, slowly modifying programs
- Weekly meetings with chair, Dean, Provost, ~year Prez
- Knew most faculty/staff

Northeastern (Teaching @ R1 Univ; 18/9K U/G, 1.8K staff)

- 8-115-600 classes, TAs
- Advising colleagues
- Research supported/rewarded, but optional
- ALL the service (quality)
- Admin == Faculty.opportunity()
- Multi-year contracts
- Creating courses, programs, campuses
- Occasional meetings with Dean, same room as higher
- Know most of the College?



Simplified Spectrum of Faculty



- Lots of demand + opportunity (+)
- Partial observability (-)
- Generally easier to move right across career (+/-)



Research University Faculty

- Goal: be an internationally renowned expert who teaches (sometimes)
- Research is central to career and advancement
 - writing grants, conducting research, advising grad students, running seminars
 - some teaching expected (1-2 courses/year), perhaps of grad/undergrad
- Teaching may not define the institution's identity
 - Teaching may vary widely
 - Bad teaching *might* cost you tenure, but good teaching alone won't earn it



Tenure-Track Items

- Timeline
 - Initial contract: 7 or 3+4 or 1+
 - Focus: build lab, publish, career award, graduate PhD
 - Often light + focused teaching/service load
 - Go up for tenure ~6
 - Usually ≥ 1 milestone along the way
 - Usually tenure = associate
 - Then ... some amount of time -> Full?
- Startup: what you need (~3 years) to achieve self-sustaining research program
 - Have a budget + plan!



Thoughts

“You should enjoy leading a large research agenda, writing large grants, writing several papers a year, and working closely with PhD students for 5+ years of their lives because it is not an optional part of the career, at least not for the first 15-20 years.”

-Dan Grossman, U. Washington



Advice

“Build your research career; get help and advice from experienced faculty; focus on what matters for tenure. You will have more options later in your academic career.”

-Susanne Hambrusch, Purdue



Teaching/Regional Faculty

- Goal: do impactful research, be a good teacher
- May place more emphasis on teaching
 - Tend to be more tuition-driven -> student-experience incentive
 - Maybe B.S. only, or possibly M.S. (online)
- Teaching load may be higher; research/scholarship still expected
 - May have lower expectations regarding grants/publications (but possibly less support)
 - May have limited grad students, so research may involve undergrads
- Note: avoid the lose-lose of high teaching + research expectations, with less support for both (than R1/LA)



Thoughts

“An academic position gives you an incredible opportunity to serve. You serve students that you come into contact with and that trust you for guidance. It's a big responsibility but there are few better feelings than helping people turn around or get out of troublesome situations. You get to serve an institution that works for the betterment of society through education. You serve your peers that are also looking to make changes in society and the world by bringing up new ideas.”

- Ray Toal, LMU



Advice

“It's essential to have a love of teaching, a good sense of humor, and an ability to multi-task. It's not necessary to be an extrovert at heart – I'm certainly not – but you do need to be able to connect with lots of different types of people – both colleagues and students. The job can be exhausting at times, especially for junior faculty members – you have to love it.”

- Liz Johnson, Xavier



Liberal Arts Colleges

- Goal: be an amazing teacher-scholar-mentor
- Even more student-centered than teaching universities
 - Typically small departments and small enrollments
 - Faculty must teach a wide range of classes
 - Greater emphasis on faculty-student interaction (e.g., independent studies, summer research, clubs/events)
- Scholarship and publications are expected, at varying levels (that you need to understand!)
 - Grant writing may not be essential
 - Variety of valued venues (e.g., SIGCSE, or not)
 - Student involvement in scholarship is often expected



Thoughts

“It helps to want to actually deal with students, to be social, to value interaction. If you are someone who wants to hide away in your office, be on campus two days a week, to “lecture and leave,” the small college experience is not for you!”

- Valerie Barr, Mount Holyoke College

“Focus of my position is equally on doing good scholarship AND teaching. CS in the liberal arts context goes beyond the engineering aspects to CS as discipline of intellectual inquiry with a healthy dose of a sense of history, critical thinking, its place in society, and relationship to other academic pursuits.”

- Deepak Kumar, Bryn Mawr



Advice

“Research productivity will be slower if you are at a liberal arts college. You have to be okay with that, be willing to not measure your ‘success’ against that of your grad school peers who go into research institutions.”

- Valerie Barr, Mount Holyoke College

“Faculty positions at liberal arts colleges are NOT teaching jobs. In fact quite the opposite. They give you the freedom to carry out your scholarship. But, you do need a deep commitment to sharing your scholarship through your teaching. You also have to be a good teacher.”

- Deepak Kumar, Bryn Mawr



Teaching Faculty



Teaching Faculty

- Many (R1) universities have introduced teaching-track faculty positions
 - Allow gifted teachers to focus on classes with fewer/no research expectations
 - Mostly contract-based, some have greater job security (tenure, SOE/EOC)
- Because they are new, policies/standardization are lagging
 - Teaching (only intro/undergrad? Load?)
 - Differences in titles/promotion, evaluation, equality (e.g., voting rights, offices), research support/expectation (advising, grants, etc.), sabbatical, ...
- Opportunity: contribute to a group of amazing teachers, potentially benefiting from research culture & resources



An Example: NU

- 6-section load (Fall, Spring, S/S1/S2)
 - Can be reduced via optional research/admin
- Promotion track (Lect->Asst->Assoc->Full)
 - ≥ 3 -years, expectations increase with rank
 - Contracts: 1->3->3->5 (annual evaluation)
- \$5K Professional Development Fund
- Research: PI rights, advise students
- Service: find what drives you and contribute
 - Most common is curricular
- Citizenship: one-faculty
- Working on sabbatical (pilot right now!)



Thoughts

“The delight in teaching new-to-computing students. Not having to worry about a paper trail or grant writing for promotion. Feeling 'Parental' -- nurturing young students from frosh through senior. Getting to play -- writing a new project, learning a new tool, etc. Knowing you're making a difference in kids' lives (who graduate and tell you that years later).”

- Dan Garcia, UC Berkeley

“Very strong interest in teaching, not hoping to do much/any research, appreciate or at least be ok with any different-class citizen arrangement re: teaching versus research faculty (note I didn't say second-class, but depending on the institution YMMV).”

- Julie Zelenski, Stanford



Some Advice

“Your career can easily fill 120 hours a week. The trick is keeping it between 40-80, and knowing how and where to set boundaries. Nurture incredible staff, include them in all decisions. Who you know is just as important as what you know. Network early, often. Don't be afraid to try something crazy, new.”

- Dan Garcia, UC Berkeley



Quotes -> Advice (1)

“Although my advisor would prefer that after completing my dissertation that I take a position at a research university, I continue to feel called toward education”

- Try new things, but also remember to follow your passions – you’ll do great things and it will feel fun.
- What is the point of a job-for-life (i.e., tenure) if you don’t like the job?



Quotes -> Advice (2)

“I would also benefit tremendously from hearing what people looked for when making final choices on where to work”

- Do your homework – when you have your interview/visit schedule, be ready with questions you are interested in (and ask the same question of multiple people).
 - An example: rank distribution, what do you get to teach, what “counts” towards promotion/ advancement
- Try to get a sense of the politics/limitations as early as you can.
- First job doesn't have to be your last; change doesn't mean failure; failure is an opportunity to learn.
- (I am told) there is life outside of work... so make sure to incorporate life/family-oriented aspects into decision-making (e.g., small-town vs big-city).



Quotes -> Advice (3)

“Guidance on how to navigate the career itself”

- Get to know people inside/outside your unit/institution (e.g., SIGCSE) – be open to feedback (e.g., teaching observation) and serendipitous collaboration opportunities.
- Be realistic about what you can get done – prioritize and don’t beat yourself up when you can’t do everything. Learn how to say ... it starts with “N” and ends with “o” ...



Misc

- Salary: public data, TF Piazza
- Interviewing: do your homework, practice your talk/demo, take the opportunity to learn
- Negotiation: have specifics of what you need/care about; make your case, but don't play games/be a jerk
- Career: learn early on about “points” and prioritize; but also be a good unit citizen



Thank You :)

Questions?

Did I mention I'm
actively hiring!?

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