CMSC 601
Why Research?

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Research Departments

• UMBC is a research university
  – In the US, the Carnegie Foundation defines a classification system for Universities
  – We are in the class RU/H: Research Universities (high research activity)
  – Maintaining our classification is important and requires producing PhDs, external funding, having research active faculty, etc.

• CSEE is a research department within UMBC
  – Research is an important activity for our faculty
  – A Ph.D. degree always requires original research
  – We also require our M.S. graduates to do research
Many Jobs Require Research Ability

• Almost all faculty jobs require doing some research, sometimes a lot of research
• Many companies and organizations do sponsored research
  – E.g., SRI, JHU/APL, SAIC, Lockheed Martin, ...
• Others have internally sponsored research
  – Companies: Microsoft, Google, IBM, Qualcomm
  – Government: NASA, NIST, NRL, ARL, etc.
• Others do R&D or new products and processes
  – From big companies, start-ups
The rest

• Experience doing research helps in jobs that don’t include an R&D component
• You learn how to tackle a new area
• You learn how to set your own goals and define objectives
• You learn how to evaluate possible solutions
• You lean how to know when to try a different approach
Illustrated guide to a Ph.D.
The illustrated guide to a Ph.D.

• Professor Matt Might, CS, University of Utah has a good way of explaining what it means to do a Ph.D.
  – It is also applicable to doing MS research
  – and probably your life after graduation
• The presentation is licensed under the Creative Commons Attribution NonCommercial 2.5 License
imagine a circle that contains all of human knowledge
By the time you finish elementary school, you know a little
By the time you finish high school, you know a bit more
With a bachelor's degree, you gain a specialty
A master's degree deepens that specialty
Reading research papers takes you to the edge of human knowledge
Once you're at the boundary, you focus
You push at the boundary for a few years
Until one day, the boundary gives way
And, that dent you've made is called a Ph.D.
Of course, the world looks different to you now
So, don't forget the bigger picture
Keep pushing