

# UG Research Day: IIT Palakkad



Nitin Saxena  
CSE, IIT Kanpur  
(virtual) 19-Mar'22

# What's UG Research?

- UG Education prepares you for the professional world.
  - Doing courses, labs; giving assignments, quizzes, exams.
  - Applying known techniques, to known problems.
  - UG Research: Embarking on the unknown.
- 
- UG Research: A desire to solve the unsolved!
-

# Why UG Research?

- Unless you do assignments, you won't learn a topic.
  - Unless you do research, you would lose your curiosity to learn and invent.
  - Research tells you the frontiers of an area.
  - It inspires you to not only invent but also learn the old better!
-

# Is Research hard?

- Doing something new, always seems hard.
  - But, that's the wrong question.
  - Focus on your interest, and identify small open problems.
- 
- You can't solve big problems, before you solve small ones!
-

# **Communication gap between faculty and UG?**

- There may seem a gap, due to the difference in expectations.
  - Try meeting more, and working harder in your homework, to understand what the question is.
  - As you get more familiar in an area, your language improves, and so does the communication!
-

# Research as career?

- Every UG student should try his/her hands in a research project.
- However, research may not excite everyone at the same age.
- So, judge for yourself after you've done it.
- You should choose a career in which you're excited about the \_\_\_\_\_ work.

# Encouraging research as career?

- For UG students who show a deeper interest in research:
  - Faculty should give project, and extra reading, options in course projects.
  - Faculty should involve them in active research projects.
  - Work towards a publication, or a product development.
-

# My UG Research experiences.

- Started working on primality as BTP in July 2001.
  - Read about the old results.
  - Had tons of meetings discussing the ideas.
  - Invented a lot of new directions, and concrete results.
  - Wrote it up formally in reports; and presented multiple times.
  - All properties came together in July 2002, to yield the historic “PRIMES is in P” !
-



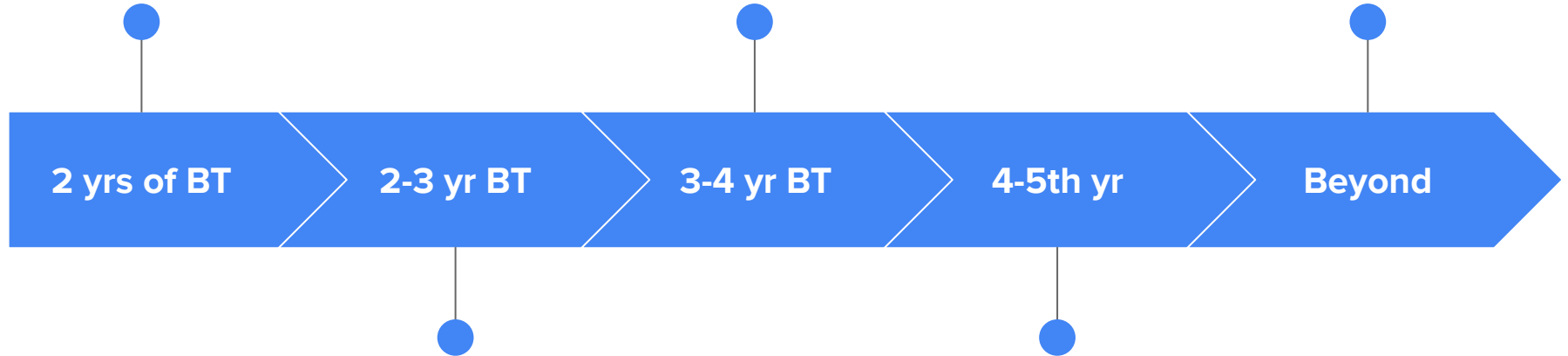
# **Institutional support.**

- Each course should have an (optional) advanced component.
    - Seminar, Survey, Project, Thesis, etc.
  - Have dedicated “UGP” or Theses.
  - Funds for travelling to conferences/workshops.
  - Admit bright UG students to MT/PhD in the 4th year.
  - Create research groups where Postdocs mentor PhDs, PhDs mentor MTs, MTs mentor BTs, BTs mentor Interns.
-

Courses, Surveys,  
Breadth-development

In-depth Projects;  
short- or long- term

Expand the scope of  
your Research  
exponentially!



Identify your Interests

Target problem-solving,  
publication, and  
product-development