

Pursuing Research As a Cummins Undergrad

Michelle Davies Thalakottur
30th June 2020

Disclaimers

Disclaimers

- **Survivorship bias is real.** However I have failed enough to give a rounded view of what it means to pursue research as an undergrad in this college.

Disclaimers

- **Survivorship bias is real.** However I have failed enough to give a rounded view of what it means to pursue research as an undergrad in this college.
- I am **only 20 years old.** Everything I know is a reflection of my 2 years pursuing research but it would be wise to seek out more experienced perspectives.

Disclaimers

- **Survivorship bias is real.** However I have failed enough to give a rounded view of what it means to pursue research as an undergrad in this college.
- I am **only 20 years old.** Everything I know is a reflection of my 2 years pursuing research but it would be wise to seek out more experienced perspectives.
- This is a general discussion about undergraduate research.

Disclaimers

- **Survivorship bias is real.** However I have failed enough to give a rounded view of what it means to pursue research as an undergrad in this college.
- I am **only 20 years old.** Everything I know is a reflection of my 2 years pursuing research but it would be wise to seek out more experienced perspectives.
- This is a general discussion about undergraduate research.
- I will discuss privilege wherever relevant and aim to be as transparent as I can.

Purpose of this talk

Purpose of this talk

- Introduce you to research and help you apply for research internships if you want to pursue it.

Purpose of this talk

- Introduce you to research and help you apply for research internships if you want to pursue it.
- Share my experience. There weren't any seniors who publicly talked about research to me and I wish there had been.

Purpose of this talk

- Introduce you to research and help you apply for research internships if you want to pursue it.
- Share my experience. There weren't any seniors who publicly talked about research to me and I wish there had been.
- Hope that you will carry this forward.

Qualifications to give this talk

- Summer 2019 : Summer Research Intern at IIT Patna
Domain : Machine Learning, Dimensionality Reduction
Published three papers over a span of 6 months.

Qualifications to give this talk

- Summer 2019 : Summer Research Intern at IIT Patna
Domain : Machine Learning, Dimensionality Reduction
Published three papers over a span of 6 months.
- Summer 2020 : Summer Research Intern at IIT Bombay
Domain: Program Analysis, Points-to analysis

Qualifications to give this talk

- Summer 2019 : Summer Research Intern at IIT Patna
Domain : Machine Learning, Dimensionality Reduction
Published three papers over a span of 6 months.
- Summer 2020 : Summer Research Intern at IIT Bombay
Domain: Program Analysis, Points-to analysis
- BE Project is also a Research Project sponsored by IIT Bombay
Topic: Formalization of a Programming Language
Domain: PL, Compilers

Part I

What is Research?

What is Research

What is Research

- This is a very hard question

What is Research

- This is a very hard question and can take hours to answer.

What is Research

- This is a very hard question and can take hours to answer.

[What is Research by Dr. Uday Khedker](#)

[You and Your Research by Richard Hamming](#)

What is Research

- This is a very hard question and can take hours to answer.
[What is Research by Dr. Uday Khedker](#)
[You and Your Research by Richard Hamming](#)
- For me, it is innovation and learning at its purest.

What is Research

- This is a very hard question and can take hours to answer.

[What is Research by Dr. Uday Khedker](#)

[You and Your Research by Richard Hamming](#)

- For me, it is innovation and learning at its purest.
- Spectrum of research: Incremental \leftrightarrow Fundamental

Why you should consider Research

Why you should consider Research

- Useful in Campus Placements?

Why you should consider Research

- Useful in Campus Placements? Sure.

Why you should consider Research

- Useful in Campus Placements? Sure.

The ability to do research shows an ability to learn new concepts deeply, apply them and present it. This is something that you can talk about in your interview.

Why you should consider Research

- Useful in Campus Placements? Sure.

The ability to do research shows an ability to learn new concepts deeply, apply them and present it. This is something that you can talk about in your interview.

- Masters and PhD program admissions committees value research experience.

Why you should consider Research

- Useful in Campus Placements? Sure.

The ability to do research shows an ability to learn new concepts deeply, apply them and present it. This is something that you can talk about in your interview.

- Masters and PhD program admissions committees value research experience.

PhD programs value it more than Masters programs.

Why you should consider Research

- Useful in Campus Placements? Sure.

The ability to do research shows an ability to learn new concepts deeply, apply them and present it. This is something that you can talk about in your interview.

- Masters and PhD program admissions committees value research experience.

PhD programs value it more than Masters programs.

The more competitive the program, the more they value it.

* Look at profiles of students in Stanford's ML graduate program.

Why you should consider Research

- Useful in Campus Placements? Sure.

The ability to do research shows an ability to learn new concepts deeply, apply them and present it. This is something that you can talk about in your interview.

- Masters and PhD program admissions committees value research experience.

PhD programs value it more than Masters programs.

The more competitive the program, the more they value it.

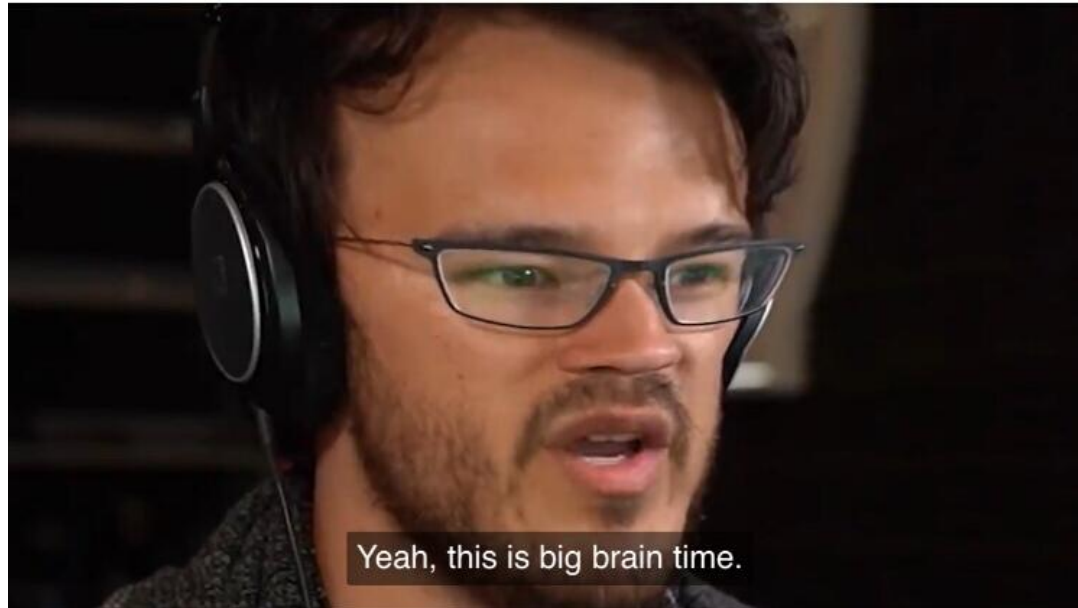
* Look at profiles of students in Stanford's ML graduate program.

- Personally, it is fun, intellectually stimulating and enriching. You might end up making a career out of it.

Common misconceptions

Common misconceptions

- You need to be smart to do Research.



Common misconceptions

- You need to be smart to do Research.

Smart?

Common misconceptions

- ~~You need to be smart to do Research.~~

~~Smart?~~ You need to be driven, excited, committed.

Common misconceptions

- ~~You need to be smart to do Research.~~

~~Smart?~~ You need to be driven, excited, committed.

- You need to know what field you want to work in from the get-go.

Common misconceptions

- ~~You need to be smart to do Research.~~

~~Smart?~~ You need to be driven, excited, committed.

- ~~You need to know what field you want to work in from the get go.~~

I changed fields! A lot of research is also multidisciplinary.

Common misconceptions

- ~~You need to be smart to do Research.~~

~~Smart?~~ You need to be driven, excited, committed.

- ~~You need to know what field you want to work in from the get go.~~

I changed fields! A lot of research is also multidisciplinary.

- You have no business even thinking about doing research as a student in Cummins. You need to be an IITian or a genius or well connected or something that you clearly aren't, to even think about doing big-brain things like research.

Common misconceptions

- ~~You need to be smart to do Research.~~

~~Smart?~~ You need to be driven, excited, committed.

- ~~You need to know what field you want to work in from the get go.~~

I changed fields! A lot of research is also multidisciplinary.

- ~~You have no business even thinking about doing research as a student in Gummins. You need to be an ITian or a genius or well connected or something that you clearly aren't to even think about doing big brain things like research.~~

You are what you tell yourself. Don't hold yourself back.

Independent Undergrad Research

Independent Undergrad Research

What is a research paper?

Independent Undergrad Research

What is a research paper?

Choose an algorithm, get some results, cite a few sources, boom it's a paper and you can get published immediately!!

Independent Undergrad Research

What is a research paper?

Choose an algorithm, get some results, cite a few sources, boom it's a paper and you can get published immediately!!

- You might impress your friends, but you aren't fooling anyone else.

Independent Undergrad Research

What is a research paper?

Choose an algorithm, get some results, cite a few sources, boom it's a paper and you can get published immediately!!

- You might impress your friends, but you aren't fooling anyone else.
- Predatory journals exist and want your money.

Independent Undergrad Research

What is a research paper?

Choose an algorithm, get some results, cite a few sources, boom it's a paper and you can get published immediately!!

- You might impress your friends, but you aren't fooling anyone else.
- Predatory journals exist and want your money.
- Publishing in certain places can be a disqualification.

Independent Undergrad Research

What is a research paper?

Choose an algorithm, get some results, cite a few sources, boom it's a paper and you can get published immediately!!

- You might impress your friends, but you aren't fooling anyone else.
- Predatory journals exist and want your money.
- Publishing in certain places can be a disqualification.

You need a Professor with good research experience to help you. Good work takes **time** and **expertise**, **not luck**. Research is a marathon, not a race.

Independent Undergrad Research

What is a research paper?

Choose an algorithm, get some results, cite a few sources, boom it's a paper and you can get published immediately!!

- You might impress your friends, but you aren't fooling anyone else.
- Predatory journals exist and want your money.
- Publishing in certain places can be a disqualification.

You need a Professor with good research experience to help you. Good work takes **time** and **expertise**, **not luck**. Research is a marathon, not a race. *Do you really want to do bad work?*

Independent Undergrad Research

What is a research paper?

Choose an algorithm, get some results, cite a few sources, boom it's a paper and you can get published immediately!!

- You might impress your friends, but you aren't fooling anyone else.
- Predatory journals exist and want your money.
- Publishing in certain places can be a disqualification.

You need a Professor with good research experience to help you. Good work takes **time** and **expertise**, **not luck**. Research is a marathon, not a race. *Do you really want to do bad work?*

Enter: Research internships! A good way for you to try out research.

Part II

How do you 'do' a Research Internship

A. Before applying

How to choose a domain

How to choose a domain

- Pick a domain that you're interested in and dive right in.

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

Explore everything and anything that seems interesting to you.

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

Explore everything and anything that seems interesting to you.

Build up a love of learning above everything else.

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

Explore everything and anything that seems interesting to you.

Build up a love of learning above everything else.

Learn to think in concepts.

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

Explore everything and anything that seems interesting to you.

Build up a love of learning above everything else.

Learn to think in concepts. Rote learning won't serve you here.

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

Explore everything and anything that seems interesting to you.

Build up a love of learning above everything else.

Learn to think in concepts. Rote learning won't serve you here.

Focus on getting your basics right.

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

Explore everything and anything that seems interesting to you.

Build up a love of learning above everything else.

Learn to think in concepts. Rote learning won't serve you here.

Focus on getting your basics right.

- You're still an undergrad.

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

Explore everything and anything that seems interesting to you.

Build up a love of learning above everything else.

Learn to think in concepts. Rote learning won't serve you here.

Focus on getting your basics right.

- You're still an undergrad. Better to try stuff out now and realise it's not for you.

How to choose a domain

- Pick a domain that you're interested in and dive right in.
- How to pick a domain?

Explore everything and anything that seems interesting to you.

Build up a love of learning above everything else.

Learn to think in concepts. Rote learning won't serve you here.

Focus on getting your basics right.

- You're still an undergrad. Better to try stuff out now and realise it's not for you. All good research experience is useful experience.

Hot vs. Not-So-Hot

Hot vs. Not-So-Hot

- The disadvantage of 'Hot' topics:
Oversaturation.

Hot vs. Not-So-Hot

- The disadvantage of 'Hot' topics:

Oversaturation.

You may get a fancy PI with no time for you.

Hot vs. Not-So-Hot

- The disadvantage of 'Hot' topics:

Oversaturation.

You may get a fancy PI with no time for you.

Many people do fake research. You might end up with one of them.

Hot vs. Not-So-Hot

- The disadvantage of 'Hot' topics:

Oversaturation.

You may get a fancy PI with no time for you.

Many people do fake research. You might end up with one of them.

- The disadvantage of 'Not-so-Hot' topics:

Not flashy. Noone is talking about it.

Hot vs. Not-So-Hot

- The disadvantage of 'Hot' topics:

Oversaturation.

You may get a fancy PI with no time for you.

Many people do fake research. You might end up with one of them.

- The disadvantage of 'Not-so-Hot' topics:

Not flashy. Noone is talking about it.

Low hanging fruit are all gone. Impact is harder.

Hot vs. Not-So-Hot

- The disadvantage of 'Hot' topics:

Oversaturation.

You may get a fancy PI with no time for you.

Many people do fake research. You might end up with one of them.

- The disadvantage of 'Not-so-Hot' topics:

Not flashy. Noone is talking about it.

Low hanging fruit are all gone. Impact is harder.

- So, what do I choose? Hot or Not-so-Hot?

Hot vs. Not-So-Hot

- The disadvantage of 'Hot' topics:

Oversaturation.

You may get a fancy PI with no time for you.

Many people do fake research. You might end up with one of them.

- The disadvantage of 'Not-so-Hot' topics:

Not flashy. Noone is talking about it.

Low hanging fruit are all gone. Impact is harder.

- So, what do I choose? Hot or Not-so-Hot?

Either can be a field that interests you. If your interest is due to how impressive a field sounds, realise that that isn't sustainable.

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself:

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference, ground-breaking research.

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference, ground-breaking research.
- Levels of expectation from a professor:

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference, ground-breaking research.
- Levels of expectation from a professor: resources

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference, ground-breaking research.
- Levels of expectation from a professor: resources, guidance

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference, ground-breaking research.
- Levels of expectation from a professor: resources, guidance, time.

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference, ground-breaking research.
- Levels of expectation from a professor: resources, guidance, time.
- What you should *not* expect:

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference, ground-breaking research.
- Levels of expectation from a professor: resources, guidance, time.
- What you should *not* expect: Spoonfeeding, personal lectures

Expectations

- As an undergraduate, you can't contribute until you put a large amount of time into building domain knowledge. The more you want, the more you will have to work for it.
- Levels of expectation from yourself: a certificate of internship, learnt something interesting deeply, a paper, a paper published in a reputable journal/conference, ground-breaking research.
- Levels of expectation from a professor: resources, guidance, time.
- What you should *not* expect: Spoonfeeding, personal lectures
Learn how to learn by yourself.

B. Applying

Common advice

- Cold email professors! They're dying to get students involved in research.
- Keep up a good CGPA and professors will ask you to work for them.
- Getting a research internship is a meritocracy.

The fallacy of common advice

- Cold email professors! They're dying to get students involved in research.

The fallacy of common advice

- ~~Gold email professors! They're dying to get students involved in research.~~ *The better the institute, the more students are dying to work with professors. Professors are wary and many don't respond to emails. Especially true with foreign universities.*

The fallacy of common advice

- ~~Gold email professors! They're dying to get students involved in research.~~ *The better the institute, the more students are dying to work with professors. Professors are wary and many don't respond to emails. Especially true with foreign universities.*
- Keep up a good CGPA and professors will ask you to work for them.

The fallacy of common advice

- ~~Gold email professors! They're dying to get students involved in research.~~ *The better the institute, the more students are dying to work with professors. Professors are wary and many don't respond to emails. Especially true with foreign universities.*
- ~~Keep up a good CGPA and professors will ask you to work for them.~~ *Nobody cares about your CGPA. If anything they use it as a qualifier but no one has asked me for my CGPA.*

The fallacy of common advice

- ~~Gold email professors! They're dying to get students involved in research.~~ *The better the institute, the more students are dying to work with professors. Professors are wary and many don't respond to emails. Especially true with foreign universities.*
- ~~Keep up a good CGPA and professors will ask you to work for them.~~ *Nobody cares about your CGPA. If anything they use it as a qualifier but no one has asked me for my CGPA.*
- Getting a research internship is a meritocracy.

The fallacy of common advice

- ~~Gold email professors! They're dying to get students involved in research.~~ *The better the institute, the more students are dying to work with professors. Professors are wary and many don't respond to emails. Especially true with foreign universities.*
- ~~Keep up a good CGPA and professors will ask you to work for them.~~ *Nobody cares about your CGPA. If anything they use it as a qualifier but no one has asked me for my CGPA.*
- ~~Getting a research internship is a meritocracy.~~ *Nothing is a meritocracy. You might be the best person for the job and still not get it. Such is life.*

The fallacy of common advice

- ~~Gold email professors! They're dying to get students involved in research.~~ *The better the institute, the more students are dying to work with professors. Professors are wary and many don't respond to emails. Especially true with foreign universities.*
- ~~Keep up a good CGPA and professors will ask you to work for them.~~ *Nobody cares about your CGPA. If anything they use it as a qualifier but no one has asked me for my CGPA.*
- ~~Getting a research internship is a meritocracy.~~ *Nothing is a meritocracy. You might be the best person for the job and still not get it. Such is life. Conversely, you might as well apply for every opportunity.*

My advice

Approach professors you know and talk to them about research. Talk about the domain you are interested in doing research.

My advice

Approach professors you know and talk to them about research. Talk about the domain you are interested in doing research.

Ask if they can refer you to a researcher they know.

My advice

Approach professors you know and talk to them about research. Talk about the domain you are interested in doing research.

Ask if they can refer you to a researcher they know.

Why do I say this?

My advice

Approach professors you know and talk to them about research. Talk about the domain you are interested in doing research.

Ask if they can refer you to a researcher they know.

Why do I say this?

- You are only as good as your PI.

My advice

Approach professors you know and talk to them about research. Talk about the domain you are interested in doing research.

Ask if they can refer you to a researcher they know.

Why do I say this?

- You are only as good as your PI. If you cold email, you might fall in with a professor who does bad research.

My advice

Approach professors you know and talk to them about research. Talk about the domain you are interested in doing research.

Ask if they can refer you to a researcher they know.

Why do I say this?

- You are only as good as your PI. If you cold email, you might fall in with a professor who does bad research. No professor will (knowingly) recommend you to anyone who does bad research.

My advice

Approach professors you know and talk to them about research. Talk about the domain you are interested in doing research.

Ask if they can refer you to a researcher they know.

Why do I say this?

- You are only as good as your PI. If you cold email, you might fall in with a professor who does bad research. No professor will (knowingly) recommend you to anyone who does bad research.
- Higher success rate

My advice

Approach professors you know and talk to them about research. Talk about the domain you are interested in doing research.

Ask if they can refer you to a researcher they know.

Why do I say this?

- You are only as good as your PI. If you cold email, you might fall in with a professor who does bad research. No professor will (knowingly) recommend you to anyone who does bad research.
- Higher success rate and they might be more invested in your doing well than a random stranger (hopefully).

**Ask your seniors to recommend professors to work with and refer you (if they can).*

How do you 'get to know' a professor?

How do you 'get to know' a professor?

Talk to them outside class. Talk about the course. Talk to them about their research. Ask to get involved in a project.

How do you 'get to know' a professor?

Talk to them outside class. Talk about the course. Talk to them about their research. Ask to get involved in a project.

Talk to them about what you want to do. Ask their opinions on those things. They have been in academia and research more than you and most are very helpful.

How do you 'get to know' a professor?

Talk to them outside class. Talk about the course. Talk to them about their research. Ask to get involved in a project.

Talk to them about what you want to do. Ask their opinions on those things. They have been in academia and research more than you and most are very helpful.

Be polite. Be kind. Be respectful. Do not talk to them to get anything. Just build a relationship with the teachers you like.

How do you 'get to know' a professor?

Talk to them outside class. Talk about the course. Talk to them about their research. Ask to get involved in a project.

Talk to them about what you want to do. Ask their opinions on those things. They have been in academia and research more than you and most are very helpful.

Be polite. Be kind. Be respectful. Do not talk to them to get anything. Just build a relationship with the teachers you like.

P.S. You might need LORs from them in the future and if you speak to them, they can write more about you than a DWIC LOR.

Cold email advice

Cold email advice

- Read that professor's papers and get to know more about their field before emailing them. They will not respond to templates that make it obvious that you have no idea what work they do.

[How to read a paper](#)

Cold email advice

- Read that professor's papers and get to know more about their field before emailing them. They will not respond to templates that make it obvious that you have no idea what work they do.

[How to read a paper](#)

- Once they respond positively, ask about the specifics of the work you would doing. Establish what you expect very clearly.

Cold email advice

- Read that professor's papers and get to know more about their field before emailing them. They will not respond to templates that make it obvious that you have no idea what work they do.

[How to read a paper](#)

- Once they respond positively, ask about the specifics of the work you would doing. Establish what you expect very clearly. Be reasonable.
Unless you want to spend 2 months doing nothing.

Cold email advice

- Read that professor's papers and get to know more about their field before emailing them. They will not respond to templates that make it obvious that you have no idea what work they do.

[How to read a paper](#)

- Once they respond positively, ask about the specifics of the work you would doing. Establish what you expect very clearly. Be reasonable.

Unless you want to spend 2 months doing nothing.
Know that you can reject them too if you aren't satisfied.

Cold email advice

- Read that professor's papers and get to know more about their field before emailing them. They will not respond to templates that make it obvious that you have no idea what work they do.

[How to read a paper](#)

- Once they respond positively, ask about the specifics of the work you would doing. Establish what you expect very clearly. Be reasonable.

Unless you want to spend 2 months doing nothing.
Know that you can reject them too if you aren't satisfied.

- Be prepared to send out a LOT of emails.

Cold email advice

- Read that professor's papers and get to know more about their field before emailing them. They will not respond to templates that make it obvious that you have no idea what work they do.

[How to read a paper](#)

- Once they respond positively, ask about the specifics of the work you would doing. Establish what you expect very clearly. Be reasonable.

Unless you want to spend 2 months doing nothing.

Know that you can reject them too if you aren't satisfied.

- Be prepared to send out a LOT of emails. 200 is not uncommon a number.

Cold email advice

- Read that professor's papers and get to know more about their field before emailing them. They will not respond to templates that make it obvious that you have no idea what work they do.

[How to read a paper](#)

- Once they respond positively, ask about the specifics of the work you would doing. Establish what you expect very clearly. Be reasonable.

Unless you want to spend 2 months doing nothing.

Know that you can reject them too if you aren't satisfied.

- Be prepared to send out a LOT of emails. 200 is not uncommon a number.
- Be prepared to be rejected

Cold email advice

- Read that professor's papers and get to know more about their field before emailing them. They will not respond to templates that make it obvious that you have no idea what work they do.

[How to read a paper](#)

- Once they respond positively, ask about the specifics of the work you would doing. Establish what you expect very clearly. Be reasonable.

Unless you want to spend 2 months doing nothing.

Know that you can reject them too if you aren't satisfied.

- Be prepared to send out a LOT of emails. 200 is not uncommon a number.
- Be prepared to be rejected a LOT.

Research programs

- IIT's have research programs that you can apply to. Look online for more program web-pages. Most applications begin in January.
- IISc's [SRFP](#) program and [INAE](#)'s summer program. Some applications end in November.
- Foreign internships:

The exorbitant fees may not be worth it.

Charpak, CERN, TIFR, etc. *I had sent an email about this. Please refer to it for more links and information.*

Good luck!

C. After Applying & During the internship

Impact, Impact, Impact

Impact, Impact, Impact

- If you apply early, ask to start working as soon as possible. Spend time BEFORE the internship to build up domain knowledge so that you can spend 2/3 months onsite doing real work.

Impact, Impact, Impact

- If you apply early, ask to start working as soon as possible. Spend time BEFORE the internship to build up domain knowledge so that you can spend 2/3 months onsite doing real work.
- Once there, fight for good work if necessary. Believe in yourself and the work you can do and if you are unhappy with a situation, ask for a change.

Impact, Impact, Impact

- If you apply early, ask to start working as soon as possible. Spend time BEFORE the internship to build up domain knowledge so that you can spend 2/3 months onsite doing real work.
- Once there, fight for good work if necessary. Believe in yourself and the work you can do and if you are unhappy with a situation, ask for a change.
- The impact you have is a function of time you put in so if you find a professor and an opportunity where you can really do good, if not great work, realise how rare and lucky that is and give it everything you have.

Impact, Impact, Impact

- If you apply early, ask to start working as soon as possible. Spend time BEFORE the internship to build up domain knowledge so that you can spend 2/3 months onsite doing real work.
- Once there, fight for good work if necessary. Believe in yourself and the work you can do and if you are unhappy with a situation, ask for a change.
- The impact you have is a function of time you put in so if you find a professor and an opportunity where you can really do good, if not great work, realise how rare and lucky that is and give it everything you have. Build a relation with your professor.

Part III

My experience, briefly

Privilege

Privilege

- Most research internships are not paid. You might need to bear the brunt of travel and living expenses and I am VERY lucky to have parents support me through this.

Privilege

- Most research internships are not paid. You might need to bear the brunt of travel and living expenses and I am VERY lucky to have parents support me through this.
- Deciding to pursue research beyond a research internship is also a great privilege. I don't need to provide for anyone and hence can make decisions that will only pay off in later years (hopefully).

Privilege

- Most research internships are not paid. You might need to bear the brunt of travel and living expenses and I am VERY lucky to have parents support me through this.
- Deciding to pursue research beyond a research internship is also a great privilege. I don't need to provide for anyone and hence can make decisions that will only pay off in later years (hopefully).
- My parents support and encourage my decisions. That can be rare, quite unfortunately.

Courage

- Research isn't talked about a lot in our college and that can make it quite isolating.

Courage

- Research isn't talked about a lot in our college and that can make it quite isolating.

I can't talk about liveness based flow and context sensitive analysis with any of my friends because no one else knows about it or thinks it is interesting.

Courage

- Research isn't talked about a lot in our college and that can make it quite isolating.

I can't talk about liveness based flow and context sensitive analysis with any of my friends because no one else knows about it or thinks it is interesting.

You won't be able to talk to them about things they are doing in their internships - Springboot? Angular?

Courage

- Research isn't talked about a lot in our college and that can make it quite isolating.

I can't talk about liveness based flow and context sensitive analysis with any of my friends because no one else knows about it or thinks it is interesting.

You won't be able to talk to them about things they are doing in their internships - Springboot? Angular?

- Choosing to go for opportunities where you aren't paid is also weird.

Why do I do it?

Why do I do it?

- It is so so so much fun.

Why do I do it?

- It is so so so much fun.
- I love learning. It fills me with a lot of joy to learn and think about these research problems, which is why I love it so much and think it's this much fun.

Why do I do it?

- It is so so so much fun.
- I love learning. It fills me with a lot of joy to learn and think about these research problems, which is why I love it so much and think it's this much fun.
- If you're like me, you might just find it to be as fulfilling as I do.

Resources

Resources

- Reddit

General subreddits: r/gradadmissions, r/LadiesOfScience, etc

Domain specific subreddits: r/ProgrammingLanguages

Resources

- Reddit

General subreddits: r/gradadmissions, r/LadiesOfScience, etc

Domain specific subreddits: r/ProgrammingLanguages

- Build relationships with your seniors and talk to them

Resources

- Reddit

General subreddits: r/gradadmissions, r/LadiesOfScience, etc

Domain specific subreddits: r/ProgrammingLanguages

- Build relationships with your seniors and talk to them

Join a club! AICVS is great!

Resources

- Reddit

General subreddits: r/gradadmissions, r/LadiesOfScience, etc

Domain specific subreddits: r/ProgrammingLanguages

- Build relationships with your seniors and talk to them

Join a club! AICVS is great!

- **Learn how to judge advice given to you.**

Resources

- Reddit

General subreddits: r/gradadmissions, r/LadiesOfScience, etc

Domain specific subreddits: r/ProgrammingLanguages

- Build relationships with your seniors and talk to them

Join a club! AICVS is great!

- **Learn how to judge advice given to you.**

Think about bias.

Resources

- Reddit

General subreddits: r/gradadmissions, r/LadiesOfScience, etc

Domain specific subreddits: r/ProgrammingLanguages

- Build relationships with your seniors and talk to them

Join a club! AICVS is great!

- **Learn how to judge advice given to you.**

Think about bias. Question about specifics: What did you learn, What would you have done differently, etc.

Resources

- Reddit

General subreddits: r/gradadmissions, r/LadiesOfScience, etc

Domain specific subreddits: r/ProgrammingLanguages

- Build relationships with your seniors and talk to them

Join a club! AICVS is great!

- **Learn how to judge advice given to you.**

Think about bias. Question about specifics: What did you learn, What would you have done differently, etc.

If it seems really easy, you might not be getting the whole story.

AMA: Ask me Anything!

You can read about the specifics
of my internship at IIT Patna [here](#)

Connect with me

[LinkedIn](#)

Shoot me an email at

michelle.thalakottur@cumminscollege.in