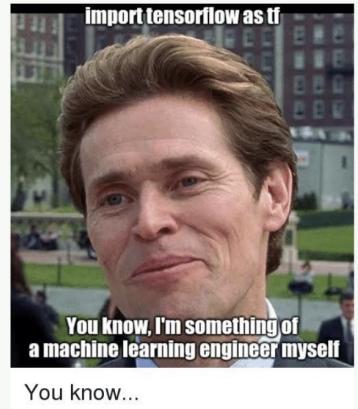


A True Journey in AI



Weekly Session: 2

AGENDA:

- Pitch from All
- Presentation on the Session
- Individual Round Table Discussion

AUDIENCE:

Anyone who wants a Career in AI

SO, YOU WANT A
CAREER IN AI ?

Sept 16, 2022
Time- 1:45 PM IST
At COE AI, OUTR

PRE REQ FOR ATTENDEES:

- Must Prepare a 2 min Pitch on:
- Things/People that Inspire You
- The reason behind it

*The people who are crazy enough to think that
they can change the world, are the ones who do
- Steve Jobs*

We must all face the choice between what is right and what is easy.
It is our choices, Harry, that show what we truly are, far more than
our abilities.

- Albus Percival Wulfric Brian Dumbledore

A stumble towards Excellence is far better than
a leap towards Mediocrity.

- Confucius

So, You want a Career in AI ?

A Guide to a journey from Undergrad to a Researcher

Center of Excellence of Artificial Intelligence

Odisha University of Technology and Research



COE-AI LAB

Outline of the Talk

- **Part 1 : Building Blocks/Pre-Req of AI**

- Mathematics
- Software Engg.
- Domain Specific Knowledge

- **Part 2 : What after Getting the Pre-Req**

- Projects
- Internships
- Social Profiles

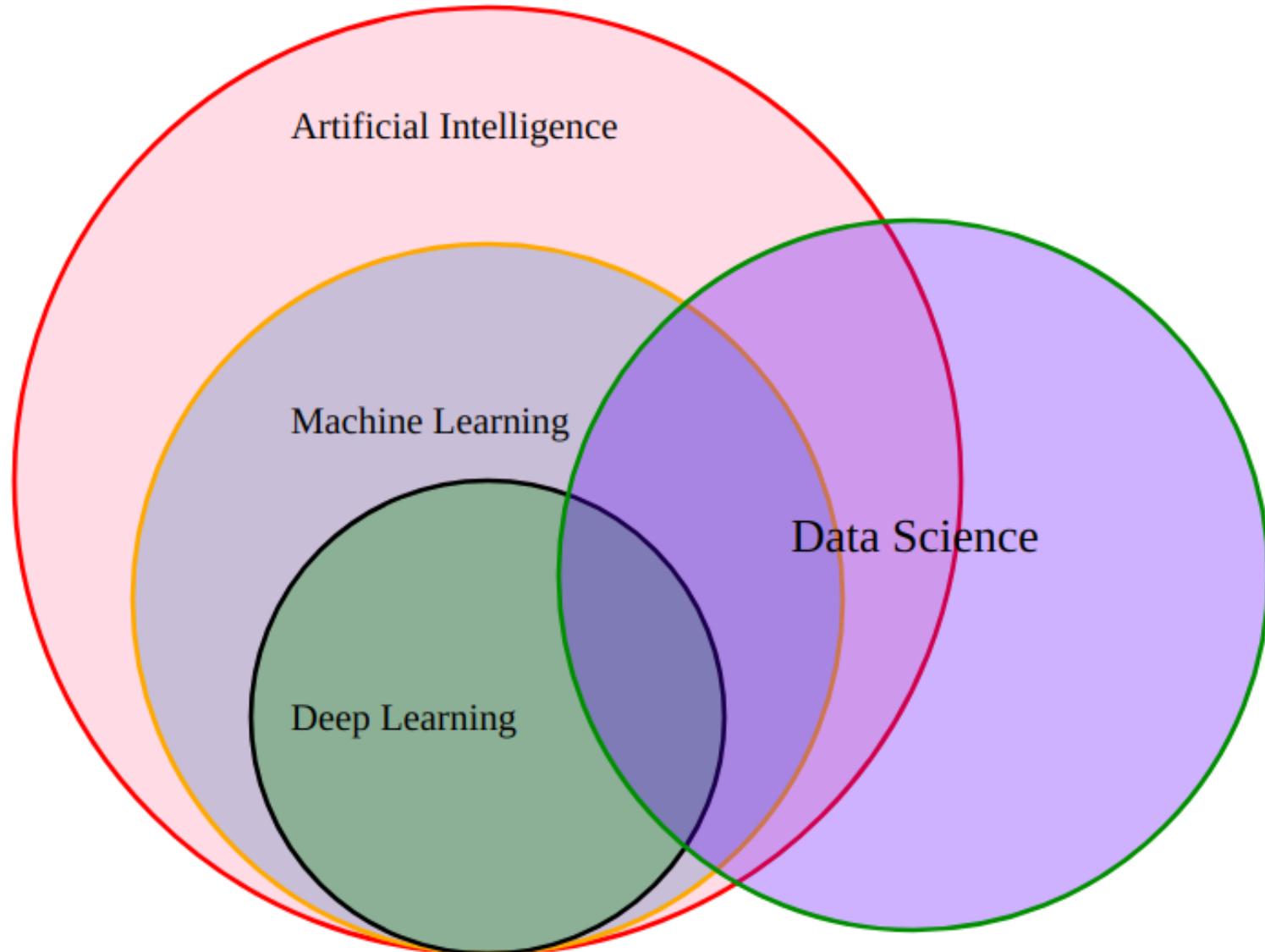
- **Part 3 : I want to go into Industry**

- Higher Studies(Masters)
- Roles Offered & PayScale at FAANGM

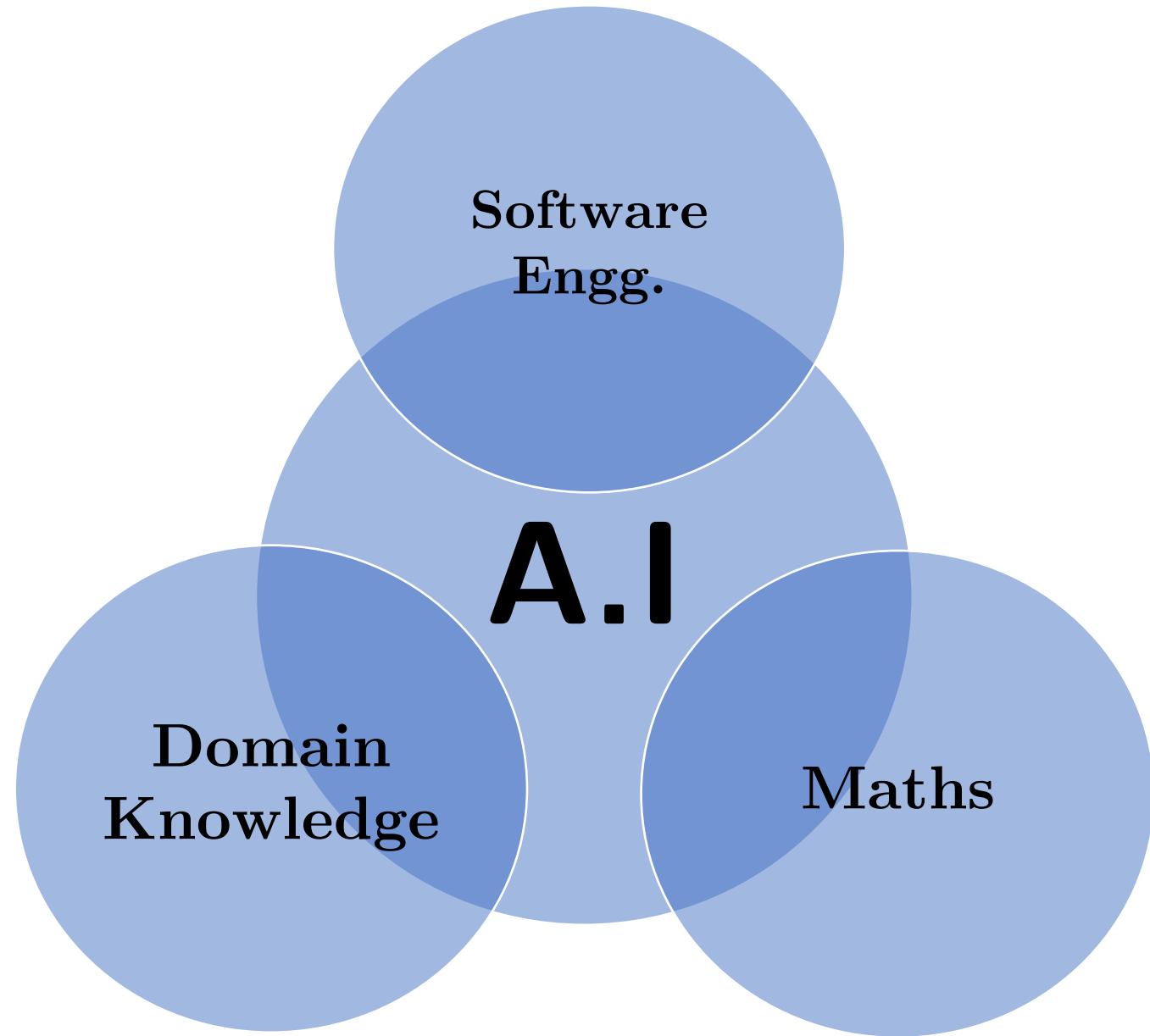
- **Part 4 : I want to go into Research/Academia**

- Higher Studies(Masters, PhD)
- Roles Offered & PayScale at Top Places

Part 1: Building Blocks/Pre-Req of AI

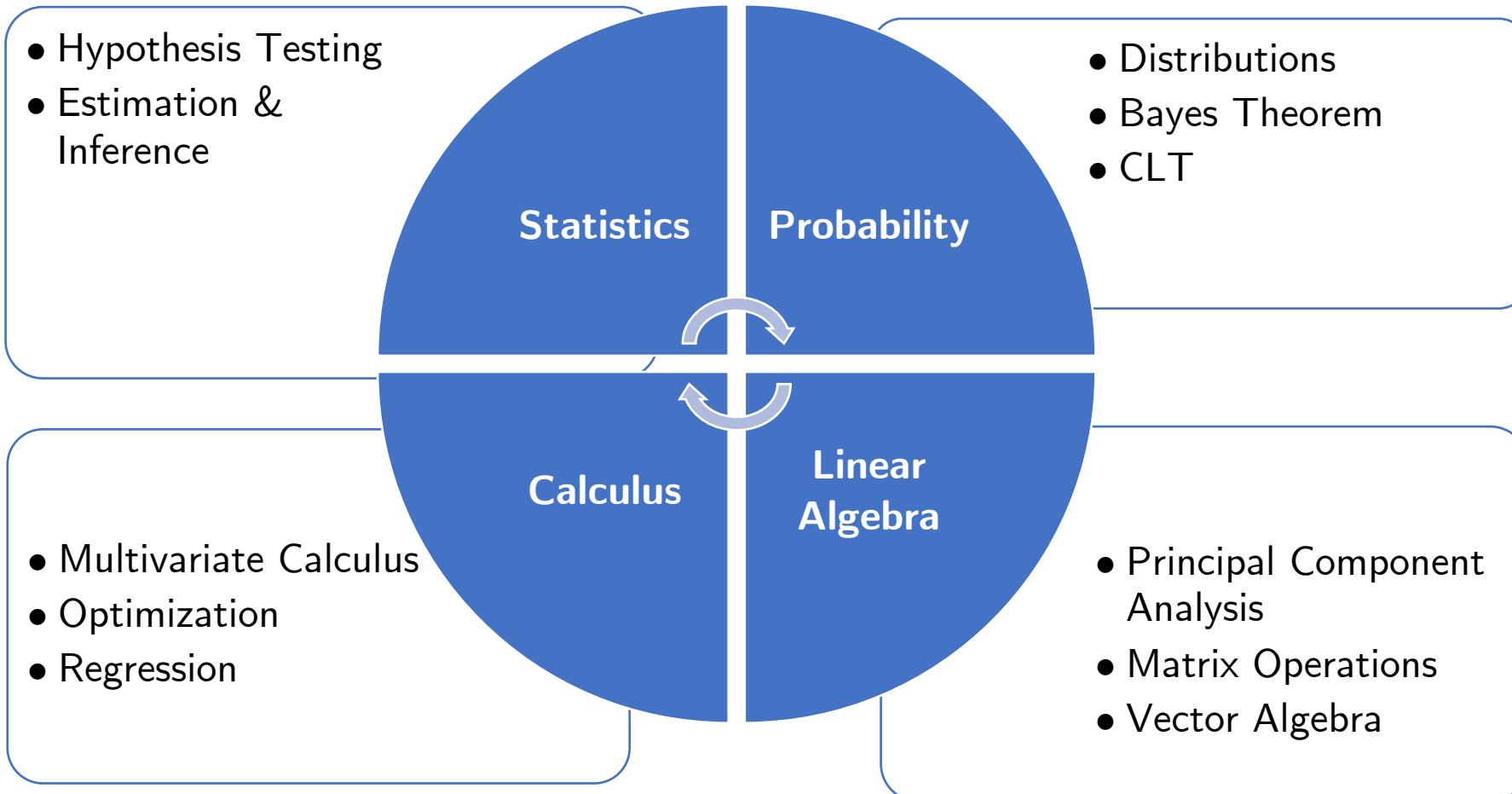


The Subset Cycle of AI

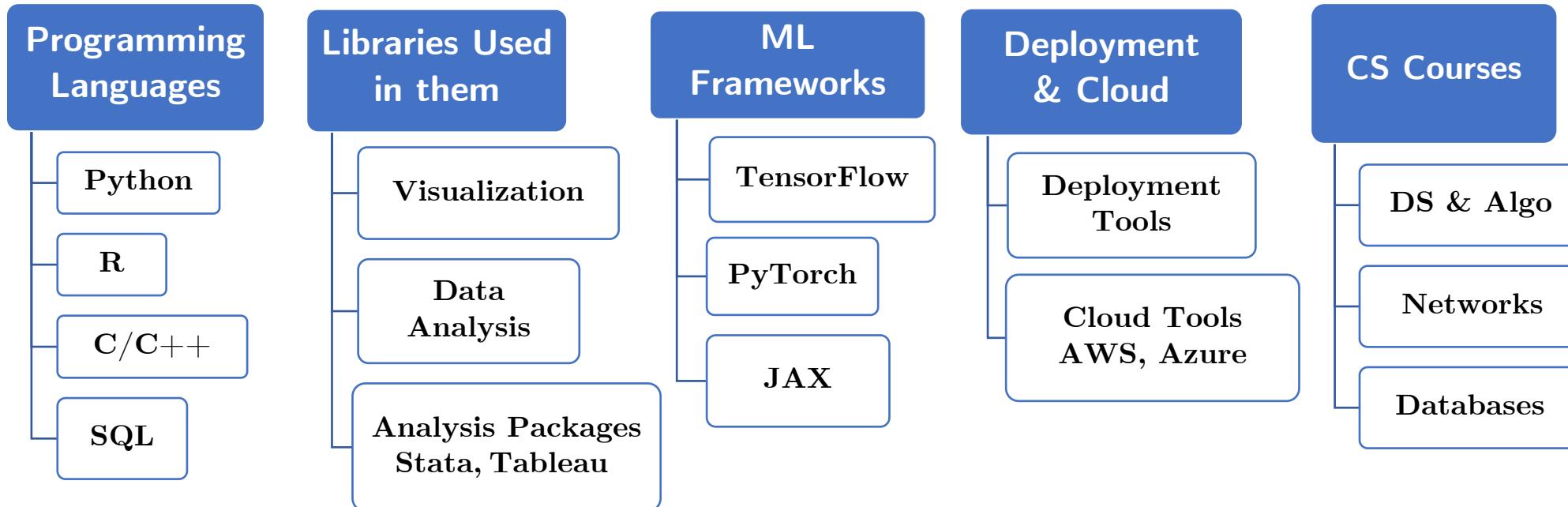


Breakdown of Pre-Requisites in AI

Maths



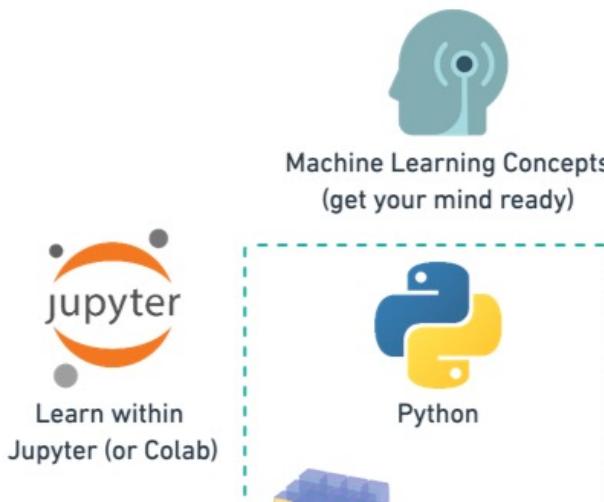
Software Engg.



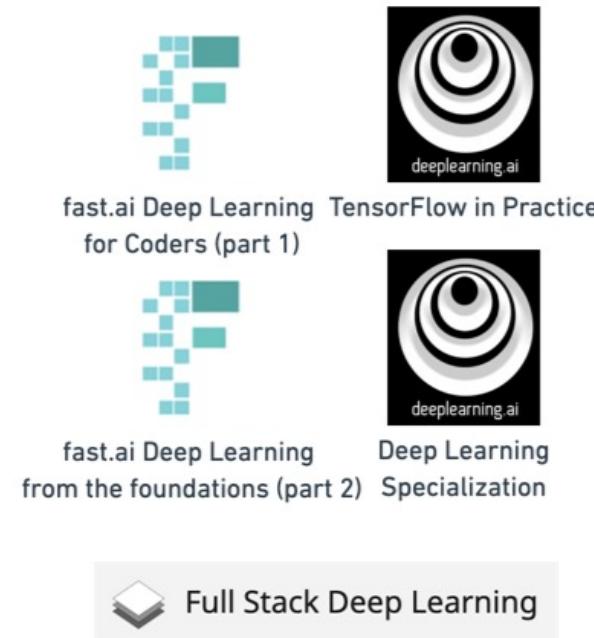
Domain Specific Knowledge

| Vision | Science | Robotics | Perception and Cognition |
|---|---|--|---|
| <ul style="list-style-type: none">• Image Processing• Segmentation | <ul style="list-style-type: none">• Physical Sc.• Biological Sc. | <ul style="list-style-type: none">• Mechanical Control• Electronics | <ul style="list-style-type: none">• Neuro Science• Heuristic |

Beginner (3-6 months+)



Advanced (6-12 months+)



Bonus (sprinkle in)

 ./missing-semester (+)

The missing part of your CS degree

Choose one



Google Cloud



 freeCodeCamp (↗)

Web Development

 Khan Academy

Math when needed



arXiv.org



Implement a paper

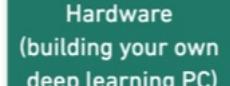
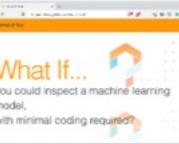


Version control



Sample Roadmap for Undergrads

Few Useful Tools in ML*

| Libraries/code space | Experiment Tracking | Pre-trained models | Data and model Tracking | Cloud Compute Services | Hardware (building your own deep learning PC) | AutoML & hyperparameter tuning | Explainability | ML Lifecycle | User Interface Design |
|--|---|---|--|--|---|---|---|---|---|
|       |    |    |   |     |    |    |    |    |  |

* Not at all a Comprehensive List can be modified according to your requirements. This is just for reference



Part 2: What after Getting the Pre-Req

Projects

Step 1: (1-2 months with 1 solution each day)

- Pick any one problem like classification, regression etc.
- Hop on to Kaggle. Pick up a dataset.
- Go through the Top upvoted Solutions.
- Just Copy n Paste(side-by-side tab). Make Submissions
- This will help build a habit and inculcate the process of making a AI model.
- Try Solving various kinds of problems and play with them.

Step 2: (1-2 months with 1 solution per 2 days)

- Now that you would have gained a fair idea of working
- Pick up a dataset and code from scratch
- Can refer to Solutions ,but don't copy
- Solve one single problem with various approaches and algorithms.

Step 3 (Only after Step 1,2 are completed)

- Pick a problem around you that bothers you.
- Refer to YouTube, Repos
- Create an End-to-End Deployment for it.
- To make at least 4 of these projects



Internships

Internships at Top Institutes in India

- Summer and Winter Internships
- IITs, NITs, IISc, ISI, IIITS, NISER, IISER are to be targeted.
- ISRO, BARC, Department of Science & Technology institutes are also highly revered.
- Can be done in any area related to AI.



Internships at Industry

- Summer and Winter Internships
- Top Tech firms in India are to be targeted.
 - All have internship programs
 - Most offer AI based programs
 - Ex- Intel, IBM, TCS etc.



Foreign Internships

- Summer Internships & Assistantships
- Germany, France, US, Middle East are to be targeted.
 - These are Fully-Funded
 - All have internship tie ups and take a lot of people.
 - Ex- DAAD, Charpak etc.



Social Profiles

The screenshot shows a LinkedIn profile for Deeksha Sabhari. At the top, there's a header with a search bar and navigation links for Home, My Network (with 2 notifications), Jobs, and Messaging. Below the header is a profile picture of Deeksha Sabhari, a young woman with glasses and purple hair, next to a historical portrait of René Descartes. A quote by Descartes is displayed: "Each problem that I solve becomes a rule which serves afterwards to solve other problems". The main section of the profile includes Deeksha's name, title (LIGO SURF '22 Payload Head at Parikshit Student Satellite | Undergraduate in Electronics and Communication Engineering), location (Bengaluru, Karnataka, India), and contact information. It also shows her education at Manipal Institute of Technology and her professional network (500+ connections). Buttons for Connect, Message, and More are present. An 'About' section at the bottom describes her as an enthusiastic learner interested in electronics and experimental physics.

LinkedIn Profile

The screenshot shows a GitHub profile for AdiNarendra98. The profile features a circular profile picture of an astronaut in space. The GitHub interface includes a navigation bar with Overview, Repositories (16), Projects, Packages, Stars (14), and a edit icon. The main content area displays the user's GitHub handle, AdiNarendra98 / README.md, and a message "Hi there! 🙋". It lists several organizations and projects associated with the user, such as ÉTS, International Institute of Information Technology Hyderabad, Carnegie Mellon University, Omdena, and iNeuron. A bio section highlights the user's work as a Deep Learning Intern at Carnegie Mellon University, research collaborator at CET BBSR, and various internships and projects. The Achievements and Highlights sections are also visible.

GitHub Profile



Social Profiles

Tanishq Abraham

Publications Talks Teaching Curriculum Vitae Blog



Tanishq Mathew Abraham

19 year old BME PhD candidate. A member of the Levenson Lab. Focused on applying deep learning to pathology.

- 📍 Sacramento, California
- 📍 UC Davis
- ✉ Email
- 💻 ResearchGate
- 🐦 Twitter
- 🔗 LinkedIn
- 📷 Instagram
- 🐙 Github
- 🎓 Google Scholar

About Tanishq

I am a 19-year-old 5th-year Ph.D. candidate currently pursuing research in Biomedical Engineering at University of California, Davis. For the past three years, I have been under the supervision of Dr. Richard Levenson at UC Davis Pathology and Laboratory Medicine. I am researching the application of deep learning (especially generative networks) to novel microscopy techniques for digital pathology. I have presented my work at several conferences, published a book chapter, established various collaborations with labs around the world, and more.

I am active on Twitter, mainly participating in discussions and sharing resources related to machine learning and STEM. I have amassed over 28k followers on Twitter (including leaders in the field of machine learning like Jeremy Howard, Andrej Karpathy, Michael Bronstein, Jack Clark, Jeff Dean, and more), with many people finding my content useful. Check out my account [here](#). Additionally, I have started a blog last year relating to machine learning topics. Check it out over [here](#). I am also active in several online machine learning communities. I participate on the [fast.ai forums](#) and one of the top 5 members of the community. Additionally, I am a moderator of the [MLSpace Discord server](#) with 5000+ members. I am also active on [Kaggle](#), where I have received 2 silver medals and 2 bronze medals in machine learning competitions, as well as achieving Notebooks Master and Discussions Master rank. Some of the content and resources I shared have been widely used throughout the machine learning community. One dataset I released on Kaggle has been used in several papers, even a Nature Machine Intelligence paper.

Finally, I have also been recognized as a child genius and a prodigy. I graduated high school at 10 years old with a 4.0 GPA. At 11 years old, I obtained 3 Associate Degrees also with a 4.0 GPA. At 14 years old, I graduated from UC Davis summa cum laude with a Bachelor's degree in

Personal Website

A pinch of Life

Posts Projects Tags About



Arpit Omprakash

A collection of deterministic choices in a world full of stochastic predicaments. Basically a nerd.

- 💻 GitHub
- Ⓜ Medium
- instagram
- > Facebook

Recent Posts

Do You Feel Lucky?

⌚ 5 minute read

A few months (rather years) back, I wrote an article titled "What is Success?" inspired by a YouTube video.

2022 Update

⌚ 3 minute read

It's been around 2 years since the last post and I need to come clean about some things. As we all know, life is a roller coaster ride and as with every othe...

Goal Setting

⌚ 3 minute read

I've been kinda busy filling out these graduate application forms. Yep I did it (just the one to be honest), but I'm figuring out things and I aim to apply t...

Phone Problems

⌚ 2 minute read

Personal/Technical Blog



Social Profiles

- Draft a Stellar CV

Points to Take Care

- Concise
- Easy to Read
- 6 pcs of Information Reqd
- It is Resume Parser to read it first. So, Crack the Algo

*Pro-Tip

- First Third of your CV is the place to shine.
- Grab all the Attention up here itself.

Debarghya Das

debarghyadas.com | fb.co/dd
deedy@fb.com | 607.379.5733 | dd367@cornell.edu

Last Updated on 21st June 2019

EDUCATION

CORNELL UNIVERSITY
MENG IN COMPUTER SCIENCE
Dec 2014 | Ithaca, NY

CORNELL UNIVERSITY
BS IN COMPUTER SCIENCE
May 2014 | Ithaca, NY
College of Engineering
Magna Cum Laude
Cum. GPA: 3.83 / 4.0
Major GPA: 3.9 / 4.0

LA MARTINIERE FOR BOYS
Grad. May 2011 | Kolkata, India

LINKS

Facebook:// dd
Github:// deedydas
LinkedIn:// debarghyadas
YouTube:// DeedyDash007
Twitter:// @debarghya_das
Quora:// Debarghya-Das

COURSEWORK

GRADUATE

Advanced Machine Learning
Open Source Software Engineering
Advanced Interactive Graphics
Compilers + Practicum
Cloud Computing
Evolutionary Computation
Defending Computer Networks
Machine Learning

UNDERGRADUATE

Information Retrieval
Operating Systems
Artificial Intelligence + Practicum
Functional Programming
Computer Graphics + Practicum
(Research Asst. & Teaching Asst 2x)
Unix Tools and Scripting

SKILLS

PROGRAMMING

Over 5000 lines:
Java • Shell • Python • Javascript
OCaml • Matlab • Rails • L^AT_EX
Over 1000 lines:
C • C++ • CSS • PHP • Assembly
Familiar:
AS3 • iOS • Android • MySQL

EXPERIENCE

FACEBOOK | SOFTWARE ENGINEER
Jan 2015 - Present | New York, NY

COURSERA | KPCB FELLOW + SOFTWARE ENGINEERING INTERN
June 2014 – Sep 2014 | Mountain View, CA

- 52 out of 2500 applicants chosen to be a KPCB Fellow 2014.
- Led and shipped Yoda - the admin interface for the new Phoenix platform.
- Full-stack developer - Wrote and reviewed code for JS using Backbone, Jade, Stylus and Require and Scala using Play

GOOGLE | SOFTWARE ENGINEERING INTERN
May 2013 – Aug 2013 | Mountain View, CA

- Worked on the YouTube Captions team, in Javascript and Python to plan, to design and develop the full stack to add and edit Automatic Speech Recognition captions. In production.
- Created a backbone.js-like framework for the Captions editor.

PHABRICATOR | OPEN SOURCE CONTRIBUTOR & TEAM LEADER
Jan 2013 – May 2013 | Palo Alto, CA & Ithaca, NY

- Phabricator is used daily by Facebook, Dropbox, Quora, Asana and more.
- I created the Meme generator and more in PHP and Shell.
- Led a team from MIT, Cornell, IC London and UHelsinki for the project.

RESEARCH

CORNELL ROBOT LEARNING LAB | RESEARCHER

Jan 2014 – Jan 2015 | Ithaca, NY
Worked with **Ashesh Jain** and **Prof Ashutosh Saxena** to create **PlanIt**, a tool which learns from large scale user preference feedback to plan robot trajectories in human environments.

CORNELL PHONETICS LAB | HEAD UNDERGRADUATE RESEARCHER

Mar 2012 – May 2013 | Ithaca, NY
Led the development of **QuickTongue**, the first ever breakthrough tongue-controlled game with **Prof Sam Tilsen** to aid in Linguistics research.

AWARDS

| | | |
|------|----------------------|--|
| 2014 | top 52/2500 | KPCB Engineering Fellow |
| 2014 | 1 st /50 | Microsoft Coding Competition, Cornell |
| 2013 | National | Jump Trading Challenge Finalist |
| 2013 | 7 th /120 | CS 3410 Cache Race Bot Tournament |
| 2012 | 2 nd /150 | CS 3110 Biannual Intra-Class Bot Tournament |
| 2011 | National | Indian National Mathematics Olympiad (INMO) Finalist |

PUBLICATIONS

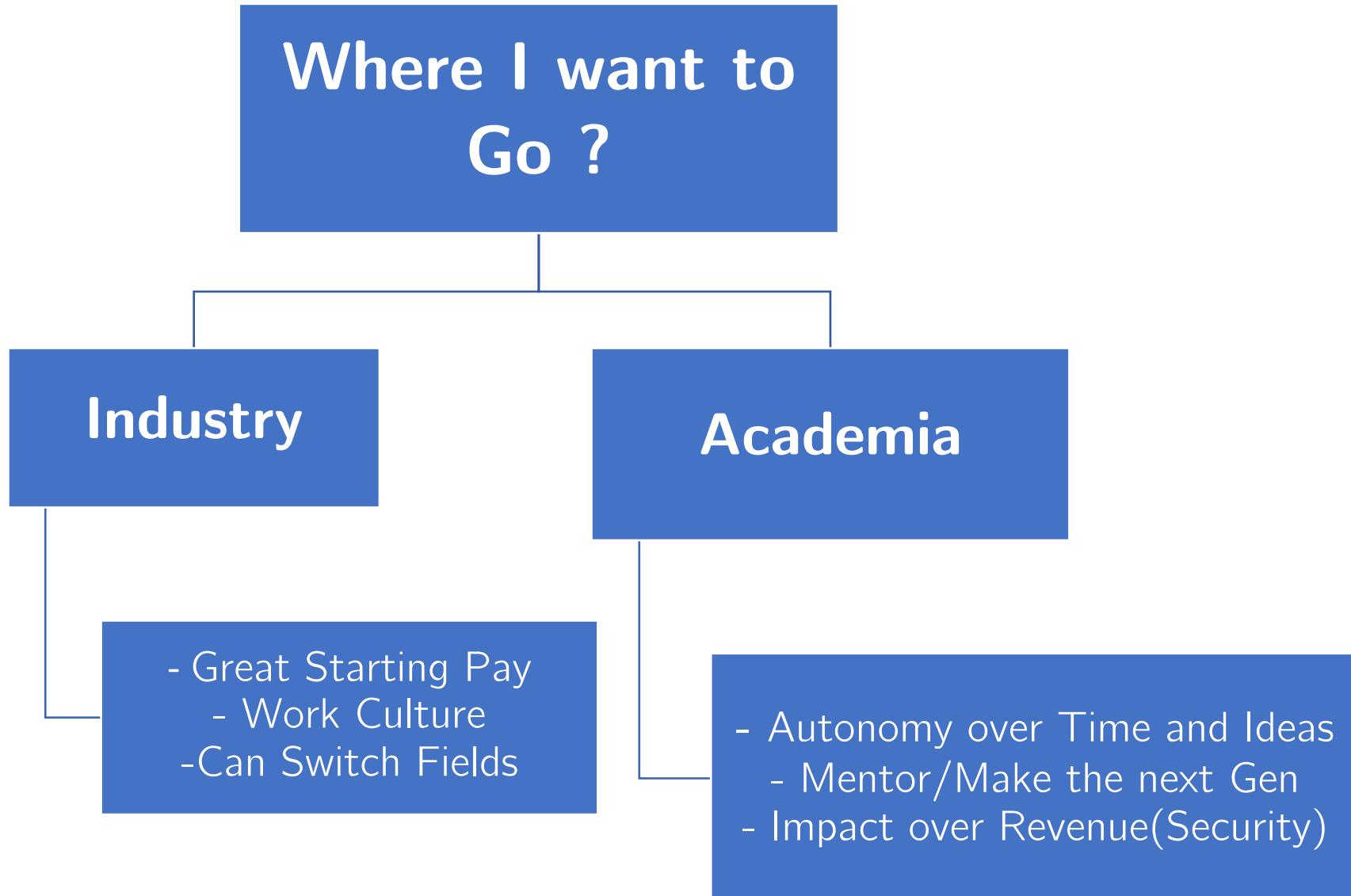
- A. Jain, D. Das, and A. Saxena. Planit: A crowdsourcing approach for learning to plan paths from large scale preference feedback. *Tech Report, ICRA*, in press.
- S. Tilsen, D. Das, and B. McKee. Real-time articulatory biofeedback with electromagnetic articulography. *Linguistics Vanguard*, in press.





Resolution for 2022

Deciding Step



Part 3 : I want to go into Industry

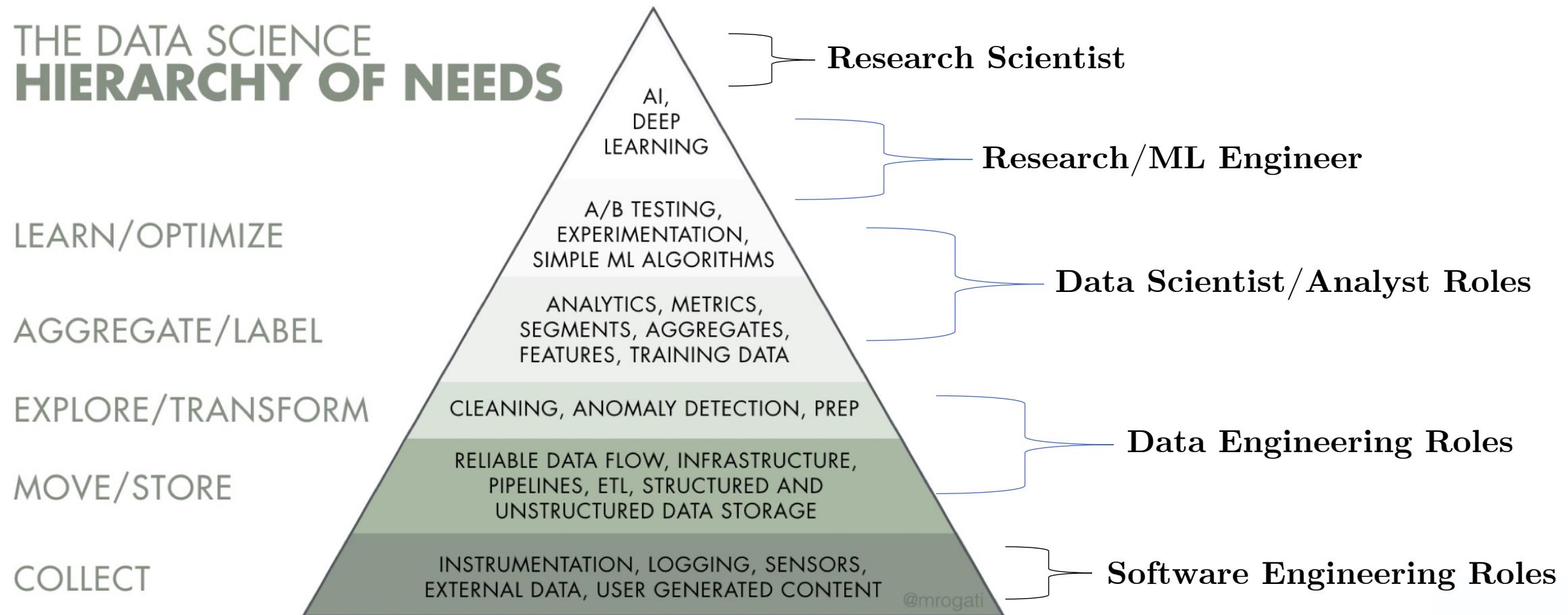
Jobs After My Undergrad Degree

| | Data Engineering | Modelling | Deployment | Business analysis | Infrastructure | Research | Task description | Skill required |
|--------------------|------------------|-----------|------------|-------------------|----------------|-----------|---|--|
| Software engineer | Primary | X | X | X | Primary | X | Prepare/clean the data | Strong coding, data base operation etc. |
| ML/AI Engineer | Secondary | Primary | Primary | X | Secondary | X | Data engineering, modelling, deployment | Coding and Data science skills |
| Data Analyst | Primary | X | X | Primary | X | X | Data analysis and Business analysis | Database query such as sql, big data etc, Domain knowledge |
| Data Scientist | X | Primary | X | Secondary | X | X | Data modelling | Math, ML. data science skill (advanced skill) |
| ML/AI Researcher | X | Secondary | X | X | X | primary | Research on modelling, improve and work on new models | Strong algorithm skills, |
| AI Product Manager | X | X | X | Primary | X | Secondary | Requirement, bridge between IT and business | Domain knowledge, Product knowledge |

Pursue a Course-Masters Degree

1. Data Science
2. Computer Science or Electrical & Computer Engineering
3. Information Systems
4. Management & Analytics

Breakdown Of Data Science/AI Roles at FAANGM



Pay-Scales*

(All Salaries reported are under ideal candidacy/market)

- **Software Engg Roles:** 120k-160k or 15 lacs+
- **Data Scientists/Analysts/Consultants:** 100k-180k or 16 lacs+
- **Data Engineers:** 90k-140k or 10 lacs+
- **Research/ML Engineers:** 120k-220k or 22 lacs+

Part 4 : I want to go into Research/Academia

Pursue a Thesis-Masters Degree + PhD

1.Computer Science

2.Electrical & Computer Engineering

3.Inter-Disciplinary Areas

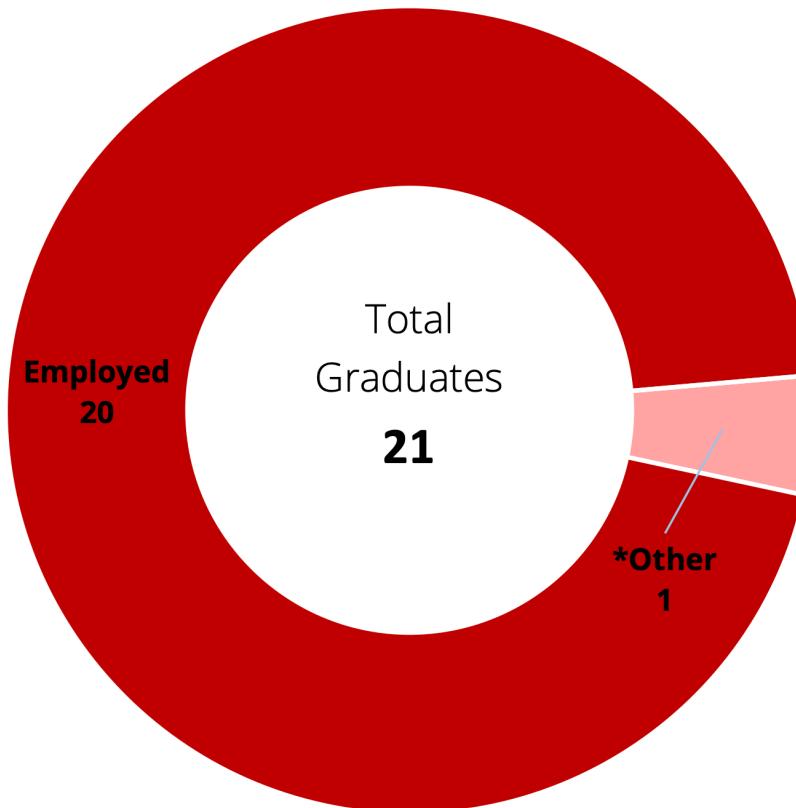
Jobs and Pay-Scales*

(All Salaries reported are under ideal candidacy/market)

1. Post-Doc/ Associate Researcher:

College of Engineering: Engineering and Public Policy, PHD

DESTINATION OUTCOMES



SALARIES

AVERAGE SALARY =
\$66,428

MEDIAN SALARY =
\$64,000

SALARY RANGE =
\$110,000 – 48,000

*Other = volunteer, military, seeking graduate school, or delay in post-graduate search.

Jobs and Pay-Scales*

(All Salaries reported are under ideal candidacy/market)

2. Assistant Professor (Without Tenure-Track):

| | School | 2019 Avg Assistant Professor Salary* | 2018 Avg Assistant Professor Salary | 18-19 Annual Growth Rate (%) | Comp Annual Growth Rate | 2011 Avg Assistant Professor Salary | Comp 2011 Avg. Assistant Professor Salary |
|----------------|--------------|--------------------------------------|-------------------------------------|------------------------------|-------------------------|-------------------------------------|---|
| 1 | Stanford | 137.0 | 131.6 | 4.1 | 6 | 103.4 | 4 |
| 2 | Harvard | 134.6 | 140.7 | -4.3 | 20 | 104.0 | 3 |
| 3 | Penn | 132.6 | 130.3 | 1.8 | 17 | 106.8 | 2 |
| 4 | Cal Tech | 132.5 | 128.3 | 3.3 | 10 | 108.1 | 1 |
| 5 | MIT | 132.1 | 124.5 | 6.1 | 3 | 100.0 | 6 |
| 6 | Columbia | 130.2 | 126.2 | 3.2 | 11 | 97.2 | 7 |
| 7 | U of C | 128.5 | 121.4 | 5.6 | 5 | 100.5 | 5 |
| 8 | Duke | 121.9 | 114.1 | 6.8 | 2 | 87.2 | 16 |
| 9 | Georgetown | 120.3 | 115.6 | 4.1 | 6 | 88.9 | 13 |
| 10 | Cornell | 118.9 | 116.6 | 2.0 | 16 | 96.5 | 9 |
| 11 | Princeton | 118.4 | 115.2 | 2.8 | 12 | 90.8 | 11 |
| 12 | Yale | 117.9 | 109.6 | 7.6 | 1 | 87.5 | 15 |
| 13 | Northwestern | 117.2 | 116.7 | 0.4 | 18 | 96.8 | 8 |
| 14 | Cal-Berkeley | 115.4 | 111.0 | 4.0 | 8 | 88.4 | 14 |
| 15 | Wash U | 114.4 | 110.4 | 3.6 | 9 | 89.9 | 12 |
| 16 | Rice | 113.9 | 107.6 | 5.9 | 4 | 86.4 | 17 |
| 17 | NYU | 113.4 | 115.2 | -1.6 | 19 | 95.6 | 10 |
| 18 | UCLA | 108.6 | 106.0 | 2.5 | 13 | 84.0 | 18 |
| 19 | Vanderbilt | 105.1 | 102.5 | 2.5 | 13 | 74.6 | 20 |
| 20 | Brown | 99.7 | 97.4 | 2.4 | 15 | 80.9 | 19 |
| Average | | 119.8 | 118.0 | 3.1 | | 98.0 | |

*1000s

Jobs and Pay-Scales*

(All Salaries reported are under ideal candidacy/market)

2. Associate Professor (With Tenure-Track):

| Years in Rank | 33th percentile | 66th percentile | Number |
|---------------------|-----------------|-----------------|--------|
| Professor | | | |
| 0-10 | 224,978 | 259,552 | 23 |
| 11-20 | 252,375 | 259,660 | 16 |
| 21+ | 252,776 | 275,078 | 17 |
| Associate Professor | | | |
| All years | 171,890 | 211,528 | 23 |
| Assistant Professor | | | |
| All years | 147,790 | 184,110 | 22 |

Jobs and Pay-Scales*

(All Salaries reported are under ideal candidacy/market)

3. Research Scientists/Engineers

We currently have data from 134 manually verified offers. All figures are in USD.

Showing at least 6 levels ▾

at least 5 positions ▾

at 13 companies ▾

Median overall ⓘ

\$335,807/year

Base salary ⓘ

\$156,000/year

Equity grant ⓘ

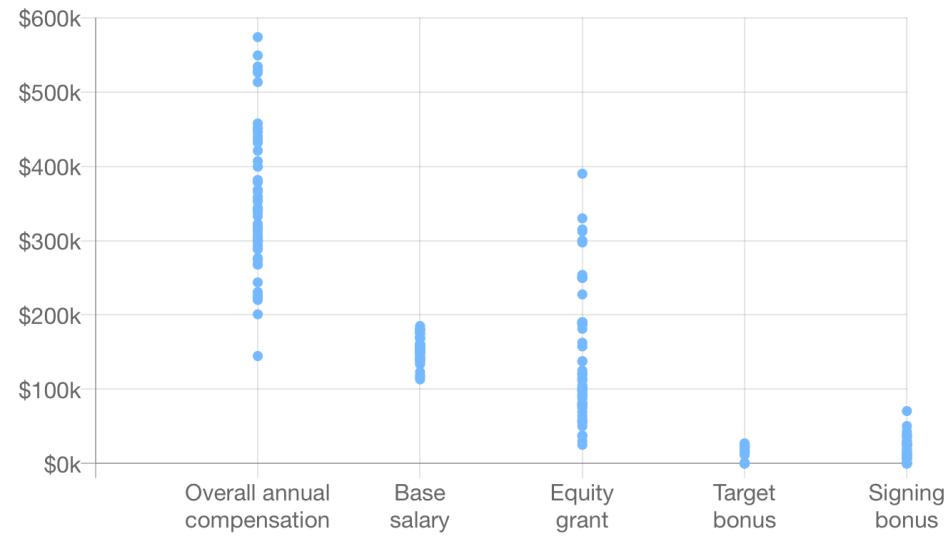
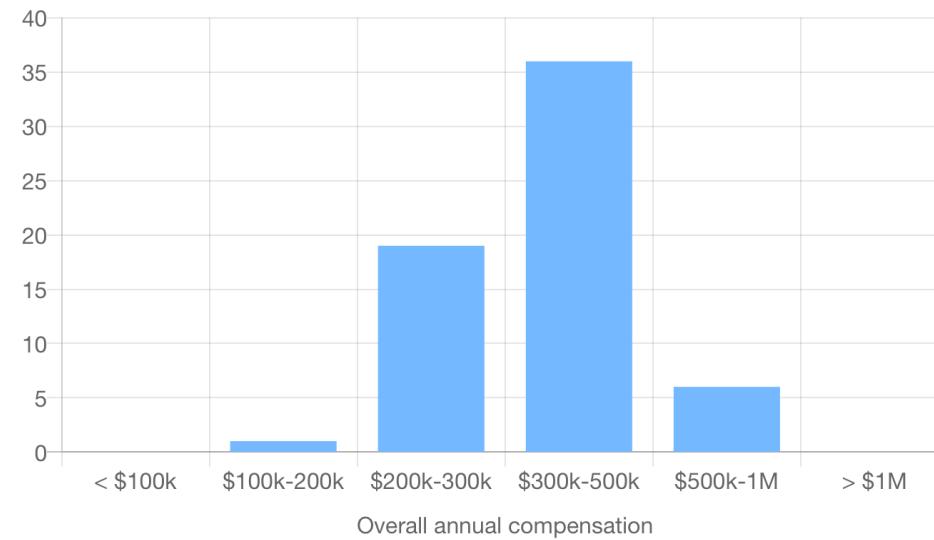
\$112,500/year

Target bonus ⓘ

\$16,000/year

Signing bonus ⓘ

\$24,375/year



All columns show annual compensation

Help will always be given at Hogwarts-to those who ask for

- Albus Percival Wulfric Brian Dumbledore



Merci 