On Mentorship Programs and CS Careers

Arun Kumar

ABLE End of Year Celebration

June 10, 2021
About Myself

2009: Bachelors in CSE from IIT Madras, India

2009–16: MS and PhD in CS from UW-Madison

2016–: Asst. Prof. at UC San Diego (CSE & HDSI)
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Ahh... 😊
My Research

New abstractions, algorithms, and software systems to “democratize” ML-based data analytics from a data management/systems standpoint
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Democratization = System Efficiency (Reduce costs) + Human Efficiency (Improve productivity)
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Democratization = System Efficiency (Reduce costs) + Human Efficiency (Improve productivity)
Outline

- MAP and My Experience
- CS Career Pathways and Tips
- Ethics in CS/Data Science
Mentor Assistance Program (MAP)

UCSD MENTOR ASSISTANCE PROGRAM (MAP) 2021-2022

UCSD MAP Important Dates to Remember

- **The MAP 2021-2022 Online Application Process is CLOSED!**
- MAP Fall Notification: on or before July 15, 2021
- **Period of Mentorship:** Fall 2021 – Spring 2022
  
  Please Note: There will not be a summer option for this program. All internships will begin in fall 2021.

Six Things to Know Before Completing Your Application Today!

- Read through the application before submitting questions via email or phone
- Take your time completing your application. There is no benefit to submitting it early.
- Once submitted, applications cannot be revised.
- Ask for recommendation letters early. Letters received after the application deadline will not be accepted.
- Please do not contact mentors directly during the application process. Questions should be
Mentor Assistance Program (MAP)

UCSD MENTOR ASSISTANCE PROGRAM (MAP) 2021-2022

Project Description:
Learn the basics of linear algebra, statistics, database schemas, and machine learning. Learn data manipulation and analysis in Python: Pandas DataFrame and Scikit-learn. Apply above skills to a real-world prediction task and dataset.

Level of Involvement:

- Emailing a student or talking to a student on the phone
- Providing the student with scholarly articles related to the student’s field of interest
- Allowing a student to come to the work/research site in order to learn how to gather data
- Opportunity for summer 2022 internship
Timeline of My Interaction with MAP

2016 Fall: Joined UC San Diego
2019 Summer: Pinged Ange on joining + support for NSF grant
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Mason, Ange amason@sdsc.edu via eng.ucsd.edu
to Arun ↓

Hi Arun!

Yay!! I am delighted!! I am so happy that you would like to join MAP!
Being from CS, you will be so popular. :o)

Do you want to set a time to talk next week?
I also run a summer camp program so after 9:00am islets for me.
Please let me know.

Ange
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Data Science in E-Commerce

Recommender Systems (2000s—)
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2019 Summer: Spoke at REHS Seminar on Data Science Careers
2019 Fall-2020 Summer: Mentored James Zhang via MAP
2020 Summer: James presented his project on ML for Security
2020 Fall: James joined UC San Diego as a CS Major! 😊
2021 Spring: Spoke at MAP Symposium upon Ange’s invite
Takeaways: Benefits of Such Programs
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For the Student:
Project experience helps with college and grad school
Presentation opportunity helps communication skills
Wonderful community of other mentees/friends
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For the Faculty:
Mentoring/impact beyond UC San Diego community
Takeaways: Benefits of Such Programs

For the Student:
Project experience helps with college and grad school
Presentation opportunity helps communication skills
Wonderful community of other mentees/friends

For the Faculty:
Mentoring/impact beyond UC San Diego community
Overall wonderfully designed and executed! 👍
Outline

1. My Experience with MAP
2. CS Career Pathways and Tips
3. Ethics in CS/Data Science
Common Careers after CS-ish Degrees

Industry:
Software Engineer/Developer
Web Developer
Data Analyst
Data Scientist
Data Engineer
Machine Learning Engineer
Product Manager
...

Academia:
Professor
Lecturer
Research Scientist
System Administrators
...

General Tips for STEM Careers
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5. *Balance* career and personal life; learn Pareto tradeoffs
6. *Rejections/failures* are common; learn coping/growth
7. Still a long way to go on *inclusivity* for many groups: women, POC, LGBTQ+, people with disabilities, etc. 😞
Outline

- My Experience with MAP
- CS Career Pathways and Tips
- Ethics in CS/Data Science
Ethics: The Trolley Problem
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Option 1
Ethics: The Trolley Problem

Option 1

Option 2
Ethics: The Trolley Problem

Option 1

Option 2

You
Ethics: The Trolley Problem

You

Option 1

Option 2

Q: Which option will you take?
Trolley Problem in Data Science

Job resume filtering machine learning model 1:
  10% error rate on whole dataset
  40% error rate on female profiles
Trolley Problem in Data Science

Job resume filtering machine learning model 1:
  10% error rate on whole dataset
  40% error rate on female profiles

Job resume filtering machine learning model 2:
  18% error rate on whole dataset
  25% error rate on female profiles
Trolley Problem in Data Science

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40% error rate on female profiles

Job resume filtering machine learning model 2:
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Q: Which model will you ship in a recruiting agency?
Amazon's Secret AI Hiring Tool Reportedly 'Penalized' Resumes With the Word 'Women's'
Amazon's Secret 'Penalized' Res

Rhett Jones
10/10/18 10:32am • Filed to:

Amazon scraps secret AI recruiting tool that showed bias against women

Jeffrey Dastin

SAN FRANCISCO (Reuters) - Amazon.com Inc’s (AMZN.O) machine-learning specialists uncovered a big problem: their new recruiting engine did not like women.
Trolley Problem in Computer Vision

Google Photos, y'all messed up. My friend's not a gorilla.
Trolley Problem in Weapons of War
Trolley Problems Exist Outside of CS too
Like most human endeavors, CS too can be a double edged sword.

It is in your hands as future professionals to use it for the good of all humankind!