On MAP and STEM Careers

Arun Kumar
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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My Research

New abstractions, algorithms, and software systems to "democratize" ML-based data analytics from a data management/systems standpoint.
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Outline

- My Experience with MAP
- STEM Career Pathways and Tips
- Ethics in STEM
Timeline of My Interaction with MAP

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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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2021 Spring: Speaking at MAP again upon Ange’s invite
My Takeaways from MAP
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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
My Takeaways from MAP

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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! 👍
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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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7. Still a long way to go on *inclusivity* for many groups: women, POC, LGBTQ+, people with disabilities, etc. 😞
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Ethics: The Trolley Problem
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Option 1
Ethics: The Trolley Problem
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Option 1

Option 2

You
Ethics: The Trolley Problem

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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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 scraps secret AI recruiting tool that showed bias against women

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 Problem in Gene Editing
Like most human endeavors, STEM too can be a double edged sword.

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