Preparation for Industrial Careers in Mathematical Sciences (PIC Math)

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How would you solve this research problem?

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Another data science problem from industry:

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Problem: Come up with criteria for determining what data are usable and what data should be rejected.

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Problem: Using data provided by Kongregate, develop an algorithm to help determine whether a submitted account is real or fraudulent.

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What is PIC Math?

Imagine a course based on solving such problems

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Components:

- summer 3-day faculty training workshop
- spring semester course for students
- student research conference

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Logistics:

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- 5-15 ugrads students in class
- student learn by doing (active learning)
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- over 100 industrial partners have provided research problems and consultants

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- Female student at Virginia State Univ (HBCU): "The PIC math helped me get my first job. The experience of successfully working in groups, and problem solving were key components in my interview. When asked about leading, and how I worked well with others, I used the PIC math as a prime example."

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- Tom Wakefield, Youngstown State Univ: "The students were so committed to the project and excited to work on a problem with practical implications that they continued to meet with the YPD over the summer as the YPD trained the officers in the implementation of the students' recommended beats. The new beats went into effect in January 2016."

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- learn to code
- develop good communication skills
- do an undergraduate research project or a summer internship
- have background in another discipline (statistics, computer science, biology, chemistry, economics)

Back to our regular programming . . .

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Resources for teaching the course

- Syllabus and course schedule
- Written research problems from industry
- Videos of industry mathematicians explaining a research problem
- Videos of professors explaining the solution to a research problem
- Student papers solving the research problem
- Videos of students presenting their research

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- The faculty member has a company they can go back to get another problem in the future.
- The faculty member has have experience and confidence on how to make contacts in the future.

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- Coca Cola
- Habitat for Humanity
- Colorado Dept of Transportation
- Heart Artery and Vein Center of Fresno
- Los Alamos National Lab
- Greensboro NC Police Dept
- Massachusetts General Hospital
- City of Kansas City
- AIG Insurance
- National Security Technologies
- Applied Geographics
- Water Utility Group
- Sandia National Lab

3-day summer faculty workshop

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Discussion topics:

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Discussion topics:

- non-academic careers and internships
- types of research problems that arise in industry
- how to help students develop skills valued in industry
- guidance on developing industry connections
- preparation for spring research course
- how to mentor students in research

Thank you!

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on Twitter (@mdorff44) and Facebook

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