Yingxian Estella Yu

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LinkedIn: https://www.linkedin.com/in/estella-yu
Github: https://github.com/EstellaYu | **Home Page**: https://estellayu.github.io

Princeton Ph.D. researcher with background in mechanical engineering, applied mathematics, and data & image analysis, seeking to apply skill sets to quantitative analysis and data science. Enjoys continuous learning, and leveraging background and skill set to support detailed and efficient analysis. Extensive qualification in leading communication and collaboration across multi-dimensional teams.

-------QUALIFICATIONS------

Technical Skills:
Machine Learning | Data Analysis | Image Analysis | Advance Data Visualization | Flask | Pandas | Matplotlib | Seaborn | Scikitlearn | Hadoop |
Languages:
Python | Java | MATLAB | SQL | JavaScript | Mathematica | HTML & CSS | Latex
Research:
Soft Lithography | Microfluidics | PIV | Experimental Design | Highspeed imaging |

CERTIFICATE
IBM Data Science Professional Certificate

Interpersonal Skills:
Communicative:
Collaborative;
Presentation design and delivery for various target audiences

Achiever:
Goal driven; Self-motivated;
Enjoy intellectual challenges

Adaptable:
Quickly learns new subject matter; Comfortable thinking beyond area of specialty

----------EDUCATION----------

Ph.D. in Mechanical and Aerospace Eng., Princeton University, Princeton NJ 2020
Advisor: Howard A. Stone, GPA: 3.92 / 4.00
M.A. in Mechanical and Aerospace Eng., Princeton University, Princeton NJ 2017
B.S. in Mechanical Eng., Boston University, Boston MA, *Summa Cum Laude* 2015

----------SELECTED PROJECTS----------

S&P500 Investment Analysis (https://sp500-investment-analysis.herokuapp.com/#page1)
- Obtain S&P500 financial data from Edgar & Quandl *API*, clean and store data in *SQLite database*
- *Quintile performance analysis* based on selected sector & criteria (PE, PB, Market Cap, etc.)
- Develop *interactive visualization* combining HTML, JavaScript, D3.js, Plotly, etc.
- Build frontend webpage using *Flask* with static *database connection*, deploy on *Heroku*.
- Ongoing: Machine learning on SP500 stock selection, including
  - Stocks k-mean clustering based on criteria matrix, with forward return as target
  - Future stock price prediction with ARIMA/SARIMA and LSTM

Where should you book your next Airbnb? (https://github.com/EstellaYu/Data_Visualization_Airbnb_Hotel)
- Python analysis on Airbnb NYC listings, obtained pricing correlation with historical timeline, listing location, and accommodation type
- Created Geo-mapping animation on historical listings with Google API

Other Projects: -- Estella's Github.io Home Page (https://estellayu.github.io)
-- Manhattan Apartment Rent Clustering and Classification, etc.

----------RESEARCH----------

Complex Fluids Group, Princeton University, Princeton NJ 2015 – 2020
Graduate Research Assistant -- *Eli and Britt Harari University Fellow*
- Invented (and patenting) an innovative micro-particle sorting/separation technology through theoretical modeling, experimental design, image and data analysis, and leading a multidimensional team cooperation
- Investigated gravity current spreading and leakage dynamics, providing theoretical and numerical insights to predict the performance of Carbon Dioxide (CO_2) underground storage.

DAMTP, University of Cambridge, Cambridge UK May - July 2018
Visiting Research Fellow – *David Crighton Fellow*
- Pioneered in investigating micro-organisms' bioluminescence phenomena under sheer in microfluidic devices, with future potentials in developing a bio-inspired shear sensor

Fluid Lab, Boston University, Boston MA 2013 – 2015
Research Assistant – *SURF Scholarship & Lutchen Distinguish Fellow*

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---------- **ACHIEVEMENTS**---------

5 Journal publications
6 Conference presentations
2 Invited Seminars
2 Funded Grant Proposals
1 Invention Disclosure
1 Patent Application

------**SELECTED HORNORS**-----

- SEAS (School of Eng. & Applied Science) Award of excellence
- ***Stanford*** Rising Star in Mechanical Engineering
- ***Caltech*** Young Investigator Lecturer
- Mary and Randall Hack '69 Award
- David Crighton Fellowship
- Eli and Britt Harari University Fellowship
- National Science Foundation Training Grant
- Princeton University Fellowship

Additional Skills:

Motivated self-starter; Superb organization and time management; Detail oriented; Meets deadline; Experienced at navigating and summarizing scientific literature; Proven written and oral communication skills

----------**SELECTED PUBLICATIONS**----------

Publications (Google Scholar https://scholar.google.com/citations?user=TH4Rk5sAAAAJ&hl=en)

- ***Yu***, Zhu, Shim, Eggers, and Stone, 2018. *J. Fluid. Mech*. 857, R4.
- Brasz, Bartlett, Walls, Flynn, ***Yu***, and Bird, 2018. *Phys. Rev. Fluids* 3, 074001.
- ***Yu***, Khodaparast, and Stone, 2018. *Appl. Phys. Lett.*, 112.18, pp.181604.
- ***Yu***, Khodaparast, and Stone, 2017. *Soft Matter*, 13(15), pp.2857-2865.
- ***Yu***, Zheng, and Stone, 2017. *Phys. Rev. Fluids*, 2(7), 074101

SELECTED PRESENTATIONS

- Department of Mechanical and Civil Engineering, Caltech -- ***Invited Seminar Young Investigator Lecture*** 2019
- 71th Annual Meeting of APS DFD -- ***Conference Presentation*** 2018
- Department of Mathematics, University of Oslo, Norway -- ***Invited Talk*** 2018
- 70th Annual Meeting of APS DFD -- ***Conference Presentation*** 2017
- 91th ACS Colloid & Surface Science Symposium -- ***Conference Presentation*** 2017

----------**LEADERSHIP**----------

Teaching

Lead Assistant Instructor (MAE305 Differential Equations) Fall 2017, 2018

- Instructed review sections and a regular lecture to a class of 100+ undergraduate students.
- Designed educational presentation and activities introducing technical mathematical concepts.
- Led graduate assistant instructors for AI meetings, exam proofread, and grading management.

Lead Assistant Instructor (MAE552 Theoretical Fluid Mechanics) Spring 2018

- Assisted teaching in a core grad-level theoretical fluid mechanics course.
- Responsible for weekly office hour, problem sets and exams proofread and grading.

Mentoring

Complex Fluids Group, Research Mentor (1 *Senior Thesis*, 1 *Junior* and 1 *Summer Research*)

- Supervised multiple undergraduate students for research projects with different learning styles
- Guided students through theoretical understanding, experimental design, image analysis, data analysis, figure development and presentation design and delivery.

----------**OUTREACH**----------

Harlem Prep to Princeton, Princeton University, MAE April 2016, 2017, 2018

- Design and presented scientific bench-top outreach experiments to elementary school students from Harlem Prep.

Holiday Lecture in Princeton community, Princeton, PRISM Dec 2016, 2017, 2018

- Assist in preparation of holiday science lecture for the general audience in the Princeton community

NanoDay Volunteer, Boston Museum of Science Nov 2014