COLUMBIA ENGINEERING GRADUATE EDUCATION

http://gradengineering.columbia.edu
seasgradmit@columbia.edu

COLUMBIA UNIVERSITY HISTORICAL HIGHLIGHTS

- Founded in 1754 as King's College by a royal charter of King George II of England
- Columbia is the oldest institution of higher education in New York and the fifth oldest in the US
- In 1784, renamed Columbia University
- In 1897, moved to Morningside Heights at 116th Street and Broadway
- Currently expanding with 17-acre Manhattanville campus at 125th Street and Broadway
- Manhattanville will be home to Jerome L. Greene Science Center

THE NEW YORK ADVANTAGE

- Campus in the Morningside Heights neighborhood of Manhattan
- New York City is a major headquarter for high-tech research/development, finance and more
- Strong Columbia alumni network: *Facebook: Columbia: @ColumbiaAlumniA; SEAS: @myceaa*
- Long tradition of collaboration with private industry and public sector (jobs, internships, networking)

COLUMBIA SCHOOLS

- Architecture, Planning and Preservation
- College of Physicians and Surgeons
- Columbia College
- Graduate School of Arts and Sciences
- Graduate School of Business
- School of the Arts
- School of Continuing Education
- School of Dental Medicine
- **School of Engineering and Applied Science**
- School of General Studies
- School of International and Public Affairs
- School of Journalism
- School of Law
- School of Nursing
- School of Public Health
- School of Social Work

ABOUT COLUMBIA ENGINEERING

- Columbia University founded in 1754 as Kings College
- School of Mines founded in 1864
- Columbia Engineering renamed in 1997 in recognition of Z.Y. Fu, a major benefactor
- In the forefront of collaborative research and teaching
- Columbia Engineering faculty and students are responsible for major accomplishments *(FM radio, the first x-ray photograph taken in America, mass production of antibiotics, and first robots)*
- A core part of Columbia's major interdisciplinary endeavors: *Columbia Nano Initiative, Data Science Institute, Zuckerman Mind Brain Behavior Institute, Precision Medicine Initiative, Freedom of Expression initiative*

THE ENGINEERING RENAISSANCE

Engineering transforms every aspect of life

- Energy, Water, Air, Environment, Food, Shelter, Mobility, Communication, Safety, Health, Medicine

Engineering is informed by and informing every other discipline

- Science, Humanities, Arts, Medicine, Public Health, Policy, Law, Business, Journalism, Architecture, International and Public Affairs, Social Work

THE ELEMENTS OF *COLUMBIA ENGINEERING FOR HUMANITY*

- Sustainable Humanity
- Healthy Humanity
- Secure Humanity
- Connected Humanity
- Creative Humanity

COLUMBIA FACULTY & STUDENTS: CREATIVE, DIVERSE, INNOVATIVE

- Creativity is sparked by an environment that values diversity
- Columbia embraces and celebrates diversity
- We are part of Columbia University in the City of New York
- New York is the most diverse, exciting, and creative city in the world!

COLUMBIA ENGINEERING ALUMNI

James Albaugh
Civil Engineering
MS (1974)

President
BOEING

Shawn Edwards
Electrical Eng
BS (1990), MS (1995)

CTO
Bloomberg

Qi Yin
Computer Science
MS (2013)

CEO & Co-Founder
FACE++ inside

Anne Gates
Operations Research
MS (1982)

CFO & Vice President
Walt Disney

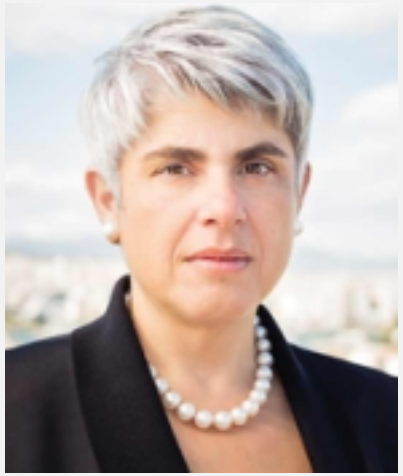
COLUMBIA ENGINEERING ALUMNI

Shahram Ebadollahi
Electrical Eng
MS (1999), PhD (2005)

VP of Innovation
Chief Science Officer
IBM Watson Health

Fermi Wang
Electrical Eng
MS (1981), PhD (1991)

Co-founder & CEO
Ambarella Inc. HD and UHD Video Processing



Angeliki Frangou
Mechanical Eng
MS (1988)

CEO
Navios Maritime

Marshall Cox
Electrical Eng
PhD (2013)

CEO & Founder
Radiator Labs

COLUMBIA ENGINEERING ALUMNI

Ursula Burns

Mechanical Eng

MS (1982)

CEO

xerox

Michael Massimino

Industrial Eng

BS (1984)

Astronaut

NASA

Jonathan Rosenberg

Electrical Eng

PhD (2001)

VP and CTO

cisco

Vikram Pandit

Electrical Eng

BS (1976), MS (1977)

Former CEO

citigroup

COLUMBIA ENGINEERING ALUMNI

John Oringer
Computer Science
MS (1999)

CEO & Founder

shutterstock™

Regina Barzilay
Computer Science
PhD (2003)

MIT Professor
MacArthur Genius (2017)

MIT

Alvin Roth
Operations Research
BS (1971)

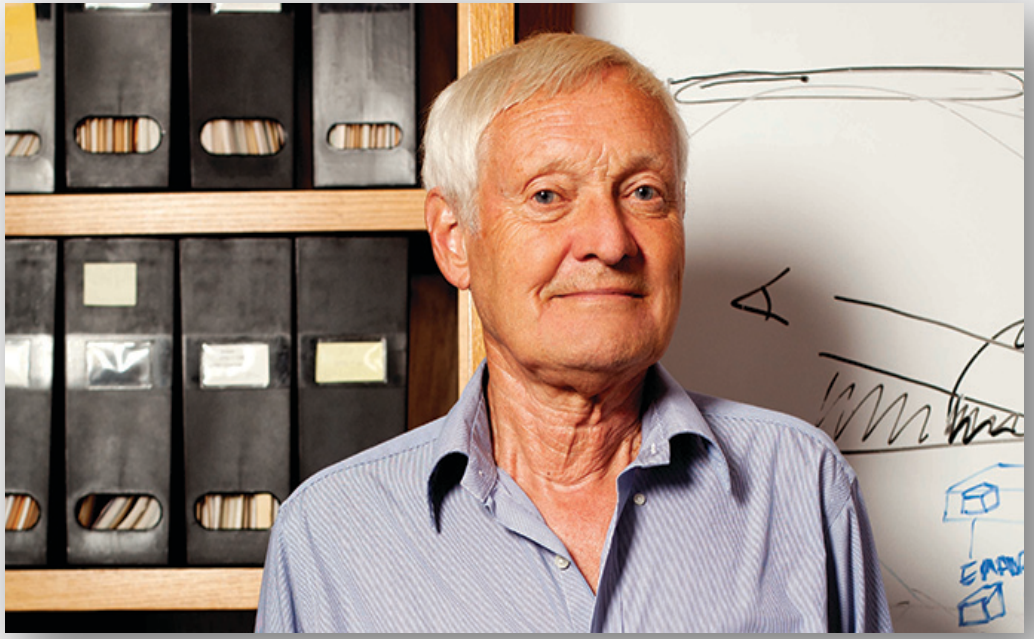
2012 Nobel Laureate
Economics

Robert C. Merton
Operations Research
BS (1966)

1997 Nobel Laureate
Economics

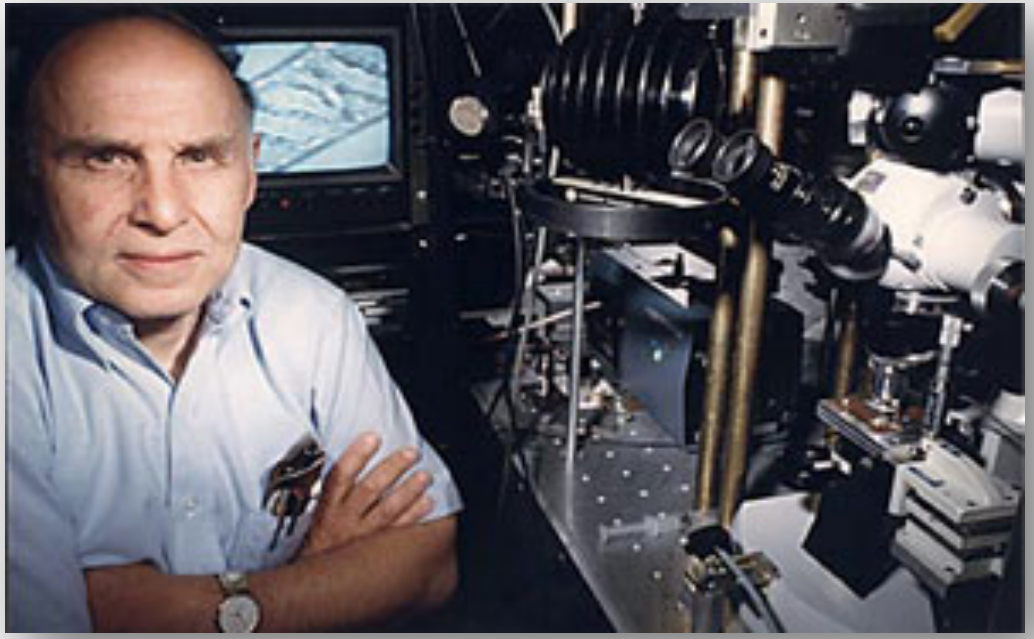
COLUMBIAN NOBEL LAUREATES

2017 Nobel Prize in Chemistry Awarded to Professor Joachim Frank



Developed cryo-electron microscopy for the high-resolution structure determination of biomolecules in solution.

2018 Nobel Prize in Physics Awarded to Dr. Arthur Ashkin



Produced groundbreaking research in laser physics, including optical tweezers that grab particles, atoms, viruses and other living cells with their laser beam fingers.

EDUCATIONAL PATH FOR LEADERS

- Technical depth
- Columbia's famed liberal arts core curriculum
- Research opportunities
- Global opportunities
- Internship opportunities
- Entrepreneurship mentoring and programming

GRADUATE ENGINEERING ENROLLMENT & PROFILE

- **2,100 Engineering Graduate students**
- **77% International students:**
  Brazil, Canada, Chile, China, France, Germany, Greece, India, Italy, Mexico, Spain, South Korea, Switzerland, Turkey, UK
- **34% PhD and 66% MS**

WORLD CLASS MS PROGRAMS

Department of Industrial Engineering & Operations Research

- MS in Financial Engineering
- MS in Business Analytics **(NEW)**
- MS in Operations Research
- MS in Management Science & Engineering
- MS in Industrial Engineering (Systems Engineering)

Department of Electrical Engineering

- MS in Electrical Engineering

Department of Computer Science

- MS in Computer Science

Department of Civil Engineering & Engineering Mechanics

- MS in Construction Engineering and Management
- MS in Civil Engineering/Engineering Mechanics/Structural Engineering

MS in Computer Engineering

WORLD CLASS MS PROGRAMS

Department of Chemical Engineering

- MS in Chemical Engineering

Department of Mechanical Engineering

- MS in Mechanical Engineering

Department of Applied Physics & Applied Math

- MS in Applied Math
- MS in Applied Physics
- MS in Materials Science & Engineering
- MS in Medical Physics

Department of Biomedical Engineering

- MS in Biomedical Engineering

WORLD CLASS MS PROGRAMS

Department of Earth & Environmental Engineering

- MS in Earth & Environmental Engineering

Data Science Institute

- MS in Data Science

IEOR Industrial Engineering & Operations Research COLUMBIA | ENGINEERING

FIVE DISCIPLINES

- Operations Research (MS & PhD)
- Financial Engineering (MS)
- Management Science & Engineering (MS)
- Business Analytics (MS)
- Industrial Engineering (Systems Engineering) (MS & PhD)

JOINT & DUAL DEGREES WITH OTHER COLUMBIA SCHOOLS

MS in Business Analytics: partnership with Columbia Business School

MS in Management Science & Engineering: partnership with Columbia Business School

MS in Data Science: partnership between SEAS: CS & IEOR and GSAS: Statistics

Dual MS: Computer Science & Journalism: partnership with Columbia School of Journalism

Dual MBA Executive MS in Engineering and Applied Science: partnership with Columbia Business School

APPLICATION DEADLINES

PROGRAM TYPE	SPRING ENTRY DEADLINE
All	Oct. 15

PROGRAM TYPE	FALL ENTRY DEADLINE
Doctoral *MS/PhD, PhD*	Dec. 15
M.S. Programs	Jan. 5 to Feb. 15

APPLICATION FOR ADMISSION

TESTS

- ✔ GRE (OPTIONAL FOR 2023)
- ✔ TOEFL/IELTS/Duolingo

MATERIALS

- ✔ Online Application Form and Fee ($85)
- ✔ All University Transcripts
- ✔ Three Recommendation Letters
- ✔ Resume or CV
- ✔ Personal Statement
- ✔ Video Interview (program dependent)

COLUMBIA | ENGINEERING
GRADUATE CAREER PLACEMENT | PROFESSIONAL DEVELOPMENT & LEADERSHIP

Professional Development Sessions

Live sessions offered at varying days/times to support student's individual development needs

Events and Department Contacts

School- and dept-level events to continuously provide opportunity for growth and networking

Live Program-Specific Job Coaching

Each program has an assigned Career Placement Officer who is available to all students for job placement support

Career Resources Available 24/7

On-demand digital resources provide every student access to career support whenever needed

COLUMBIA | ENGINEERING
Professional Development & Leadership

CAREER PREPARATION STARTS IN THE SUMMER AND CONTINUES THROUGHOUT YOUR PROGRAM!

Phase 1: Understanding the job search process.

Phase 2: Get your resume and LinkedIn profile career ready.

Phase 3: Learn to communicate with employers effectively.

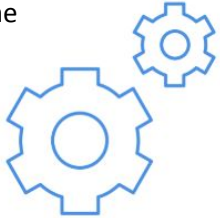
Phase 4: Connect with employers and alumni.

Phase 5: Continue developing your skill set.

PDL offered more than 70 topics this year, including:

Ethics & Integrity
Financial Wellness
Health Management
Managing your Budget
Multicultural Competence
Personal Finance
US Legal System and Working in the US

Academic Writing
Business Writing
Communicate with Impact
Formal Email Writing
Leadership in Crisis
Making Small Talk
Paraphrasing and Citation
Persuasive Communication
Public Speaking
Shape of Successful Storytelling



Amazon Web Services
Bash, Linux, SSH
Cryptography
CloudProc
Data Visualization
Deployments
Django
Get Git, GitHub
Human Centered Design
LINUX-BASH-SSH
NoSQL
Python
SQL

Acing the Programming Interview
Consulting 101
Interview Skills
Job Search Techniques
Life after F-1: H1B Visa
Resume
Natural Networking
Resume to CV
Social Media and Your Job Search

Adaptability Quotient
Emotional Intelligence
Engineer Your Happiness
Ethics and Integrity
Friend-to-Friend
Loving Me Means This
Managing Anxiety
Sleep Management
Stress Management and Reduction

COLUMBIA | ENGINEERING
GRADUATE CAREER PLACEMENT | PROFESSIONAL DEVELOPMENT & LEADERSHIP

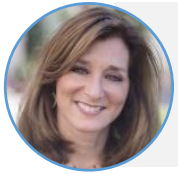
Career Placement Coach in Every Program

Dr. Jenny Mak
Head of Graduate Career Placement

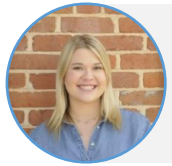
Ryan Day
Graduate Career Placement Manager

Mercedes Kriesel
Financial Engineering

David Fitzgerald
Operations Research



Mindi Levinson
Industrial Engineering Management Science and Engineering



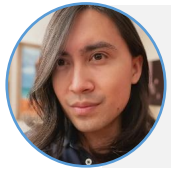
Ivy Elkins
Computer Science

Austin Cartagena
Computer Science
Mechanical Engineering

Emily McCormack
Civil Engineering
Mechanical Engineering

Kristen Henlin
Applied Physics & Math, Materials Science, Medical Physics & Biomedical Engineering

Jennifer Lee
Computer Engineering
Electrical Engineering



Gerald Cotiangco
Business Analytics

John Hyde
Data Science

Raina Ranaghan
Chemical Engineering
Earth & Environmental Engineering

Columbia | Engineering
Graduate Career Placement

Lyft
Bloomberg
GE
Google
Boeing
Exxon
AECOM
Cisco
shutterstock
McKinsey&Company
Baidu
Alibaba Group
hulu
xerox
Apple
Microsoft
SIEMENS
Navios Maritime
Tencent
Palantir
2σ
Dropbox
AQR
SpaceX
amazon
Uber
Morgan Stanley
SKANSKA
Walt Disney
Tesla
Dow
DuPont
Face++ inside
yelp
NASA
citi
JPMorgan Chase & Co.
accenture
Yahoo!
IBM
Sony
WM Waste Management
facebook
Pfizer
Goldman Sachs
Netflix
Barclays
Boston Dynamics
BASF
BCG The Boston Consulting Group
in
P&G
Unilever
Medtronic
Johnson & Johnson
Samsung

COLUMBIA | ENGINEERING
GRADUATE CAREER PLACEMENT | PROFESSIONAL DEVELOPMENT & LEADERSHIP

career.engineering.columbia.edu

seas-gcp@columbia.edu

pdl.engineering.columbia.edu

pdl-seas@columbia.edu

VISIT COLUMBIA ENGINEERING AS AN UNDERGRADUATE STUDENT

COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science

EXPERIENCE COLUMBIA ENGINEERING

The Columbia Engineering Undergraduate Visiting Student Program allows students to **broaden their college experience** and supplement the undergraduate program at their home schools by studying at Columbia for **up to two semesters.**

Students who are enrolled in a degree program at a university and **will have completed at least one year of college credit by the time of enrollment** can apply.

VISIT COLUMBIA ENGINEERING AS AN UNDERGRADUATE STUDENT

COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science

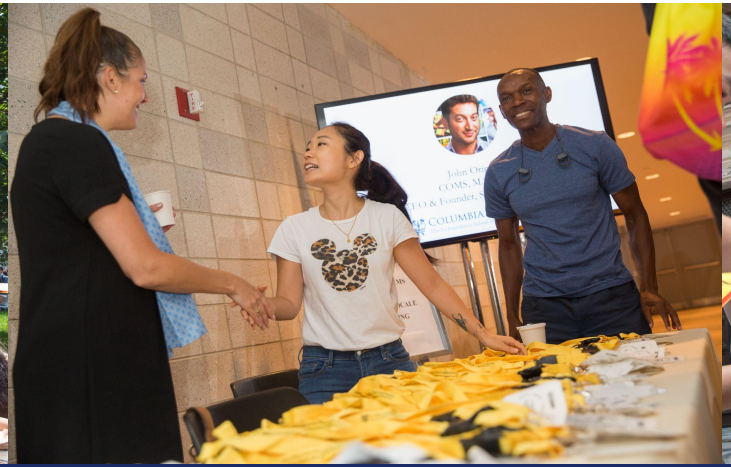
The deadline for Fall admission is March 15

The deadline for Spring admission is October 15

To learn more and obtain list of application requirements visit

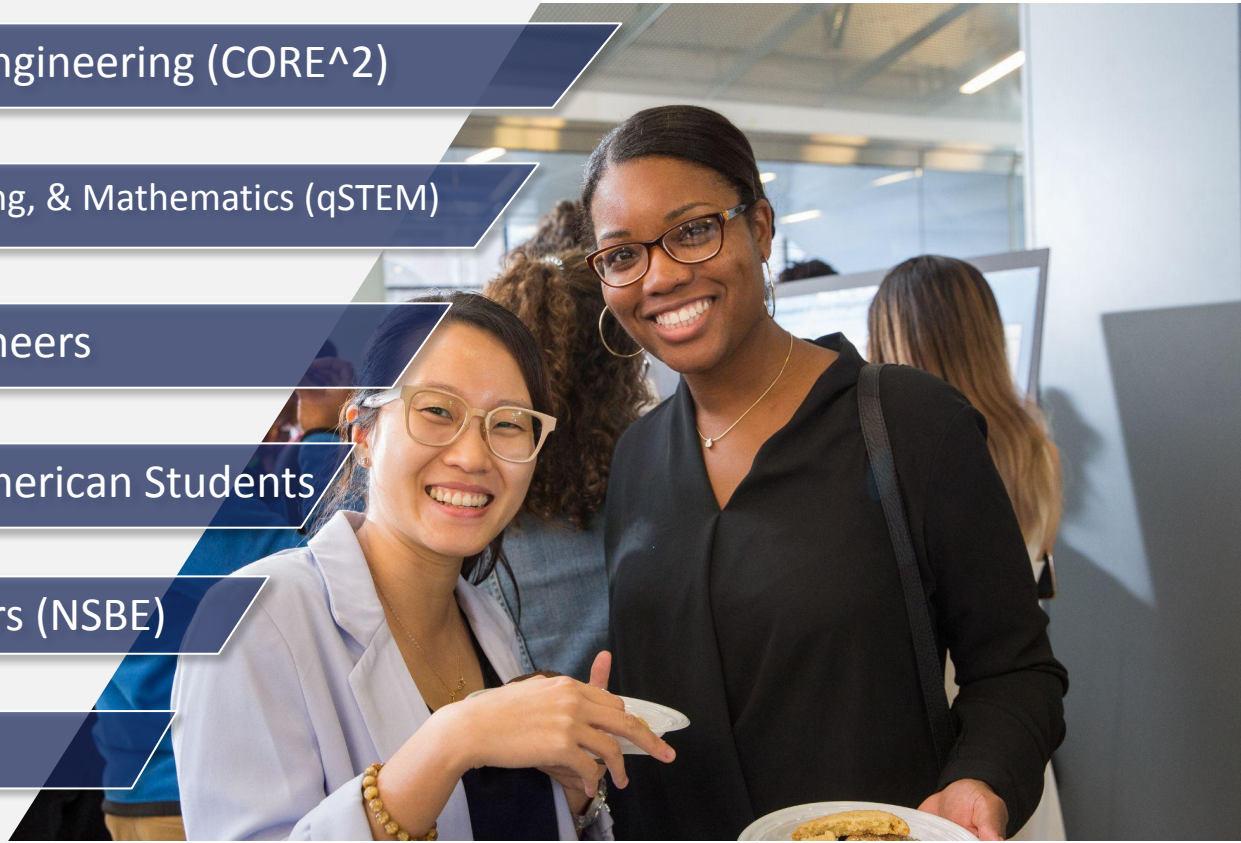
visitingprogram.engineering.columbia.edu

GRADUATE STUDENT LIFE | HEALTH & WELLNESS | GRADUATE COMMUNITY ENGAGEMENT



AFFINITY STUDENT ORGANIZATIONS

- Coalition on Race & Ethnicity in Engineering (CORE^2)
- Queer in Science, Technology, Engineering, & Mathematics (qSTEM)
- Graduate Society of Women Engineers
- Columbia Association of South American Students
- National Society of Black Engineers (NSBE)
- Hindu Yuva



ENGINEERING STUDENT ORGANIZATIONS

- Engineering Graduate Student Council (EGSC)
- Association for Computing Machinery (ACM)
- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineers (ASME)
- Columbia Science Review (CSR)
- Columbia Venture Community (CVC)
- American Institute of Aeronautics and Astronautics (cuAIAA)
- Engineers Without Borders (EWB)
- Entrepreneurship, Leadership and Consulting Club (ELC)
- Institute of Electrical and Electronics Engineers (IEEE)
- Institute for Operations Research and the Management Sciences (INFORMS)
- Society of Automotive Engineers (SAE)
- Scientists & Engineers for a Better Society (SEBS)

And many more!

ENGINEERING WELLNESS

OFFICE OF GRADUATE STUDENT AFFAIRS

At Columbia Engineering, **well-being** is an active and continuous practice, informed by ability, capacity, and environment. Well-being engages internal efficacy, promotes inclusivity and cultural humility, fosters a sense of belonging, and creates individual and organizational value. In all areas of the university, well-being is a priority that supports the advancement of knowledge and learning to the highest level and exists in a global context.

Contact Us
seas-wellness@columbia.edu

SPIRITUAL HEALTH

- How you are connected to others
- Your understanding of beliefs and values
- How you treat others

ENVIRONMENTAL HEALTH

- Acting in a sustainable way
- Cleaning up after yourself
- Respecting nature

INTELLECTUAL (MANAGING GRAD LIFE)

- Managing stress effectively
- Engaging in stimulating activity
- Work through your problems and build positive habits

SOCIAL HEALTH

- Positively participating in your community
- Building mutually rewarding relationships

EMOTIONAL HEALTH

- Being in tune with your emotions
- Having a positive outlook
- Mindfulness

PHYSICAL HEALTH

- What you Eat
- How active you are
- No substance abuse
- Sleep/Rest

COMMUNITY BUILDING EVENTS

GRADUATE STUDENT SOCIALS

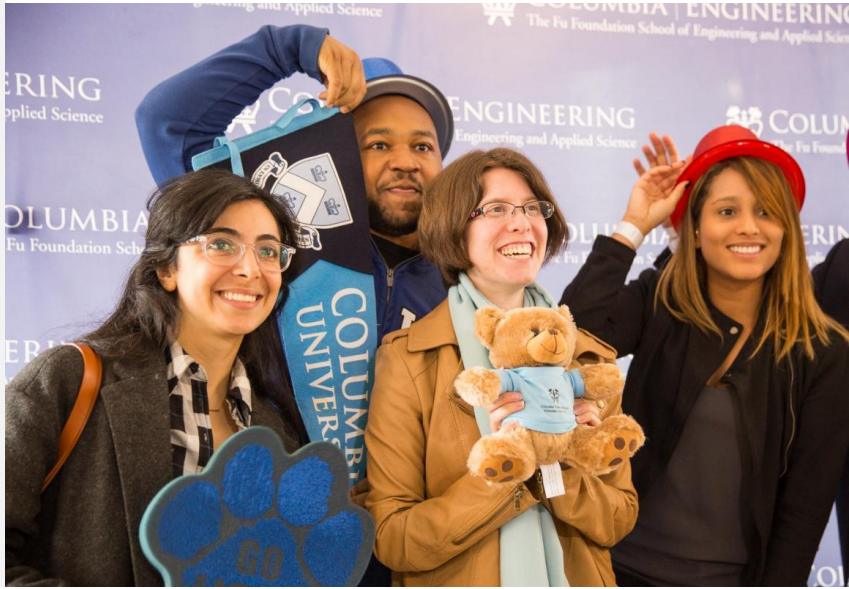
CHARACTERISTICS OF A SUCCESSFUL APPLICANT

- **Ethical and high character**
- **Proven English ability**
- **Strong academic record**
- **Academically and professionally focused**
- **Demonstrated interest in area of study**
- **Attention to detail and deadlines**
- **An all-around good fit**

TIP #1: ENGAGE! LEAD! INNOVATE!

How?

- Take challenging academic courses
- Engage in research
- Get an internship or a job
- Become a leader on campus
- Network with professionals
- Participate in competitions and projects



TIP #2: WORK ON YOUR ENGLISH PROFICIENCY

How?

- **DO NOT BE SHY!**
- Talk to the International students
- Watch American TV shows (Big Bang Theory, Gossip Girls, CSI, Friends)
- Watch the news: BBC, CNN, Bloomberg, CCTV (English Channel)
- Read English publications
- Participate in foreign exchange programs

TIP #3: DEVELOP YOUR TECHNICAL SKILLS

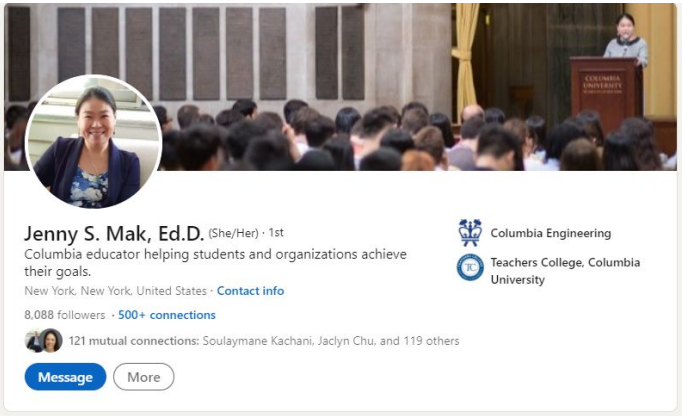
What? How?

- Learn programming: C/C++/C#, Java, Python, R, Scala, Ruby, SQL, VBA…
- Refine your research and laboratory skills
- Sharpen your statistics and data skills

TIP #4: DEVELOP YOUR PROFESSIONALISM

How?

- Firm handshake
- Dress and behave professionally and ethically
- Showcase your professionalism online: LinkedIn



STAY CONNECTED WITH COLUMBIA ENGINEERING

columbiaegsc

Soulaymane Kachani

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@Columbia Engineering

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seasgradmit@columbia.edu