Data Science and Society: Learn It and Lead It

Data Science for Future Leaders Workshop
Iona University, New Rochelle, New York USA
October 23, 2024

Florence D. Hudson, Executive Director, Northeast Big Data Innovation Hub,
COVID Information Commons, and Prototype-Open Knowledge Network Education Gateway,
The Data Science Institute at Columbia University in the City of New York
Founder & CEO, FDHint, LLC; Editor and Author; IEEE Engineering in Medicine and Biology Society

Agenda

- The Northeast Big Data Innovation Hub
- The National Student Data Corps
- Critical Success Factors for Work, Life and Leadership

Northeast Big Data Innovation Hub

- The Northeast Hub is a community convener, collaboration hub, and catalyst for data science awareness, education and innovation.
- Our mission is to build a diverse, equitable, and inclusive community for data science learners, educators, researchers and professionals with open, free, online valuable content and accessible resources.
- We strive to increase data science capacity and talent, emphasizing underserved communities.

Education + Data Literacy

Health

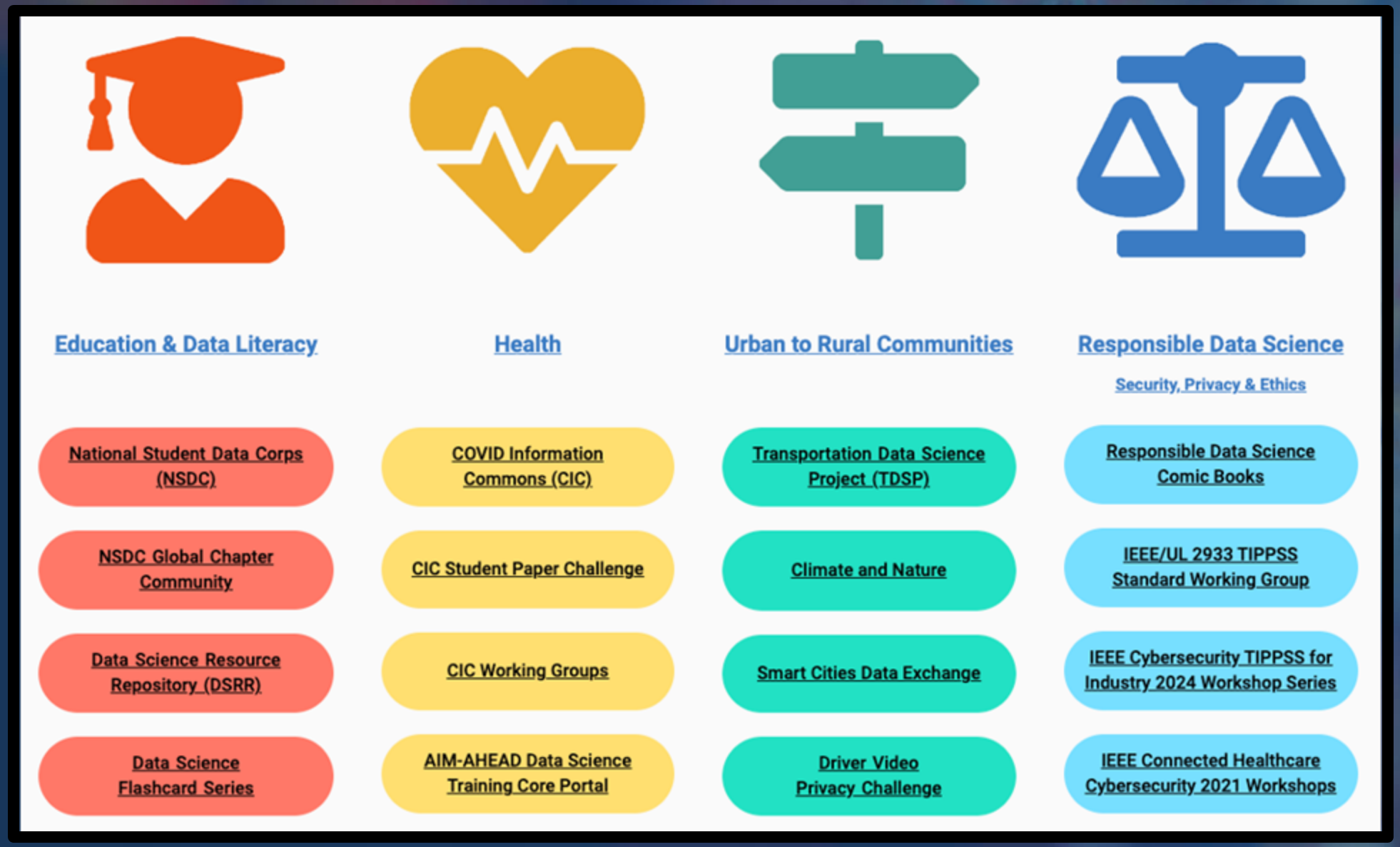
Urban to Rural Communities

Responsible Data Science: Security + Privacy + Ethics

http://nebigdatahub.org/about/

Funded by NSF grants #1550284, 1748395, 1916585, 2028999, 2139391, 2333532;
NIH AIM-AHEAD;
US Department of Transportation.

Northeast Big Data Innovation Hub Focus Areas



http://nebigdatahub.org/about/

Seed Fund Awards and Success Stories

25 Seed Fund grants - $600,000+ in funds to awardees in Northeast

Education + Data Literacy
12 awards

Health
10 awards

Urban to Rural Communities
5 awards

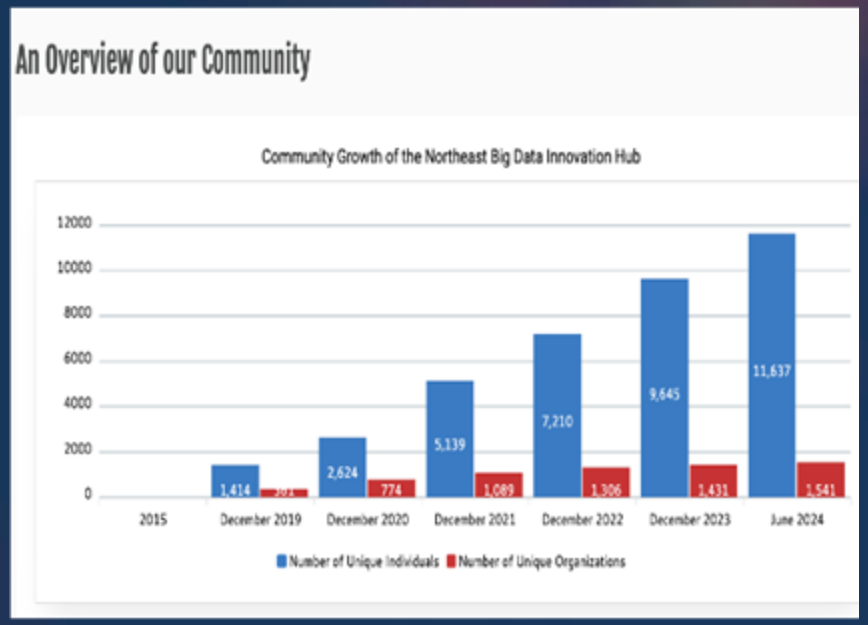
Responsible Data Science
7 awards

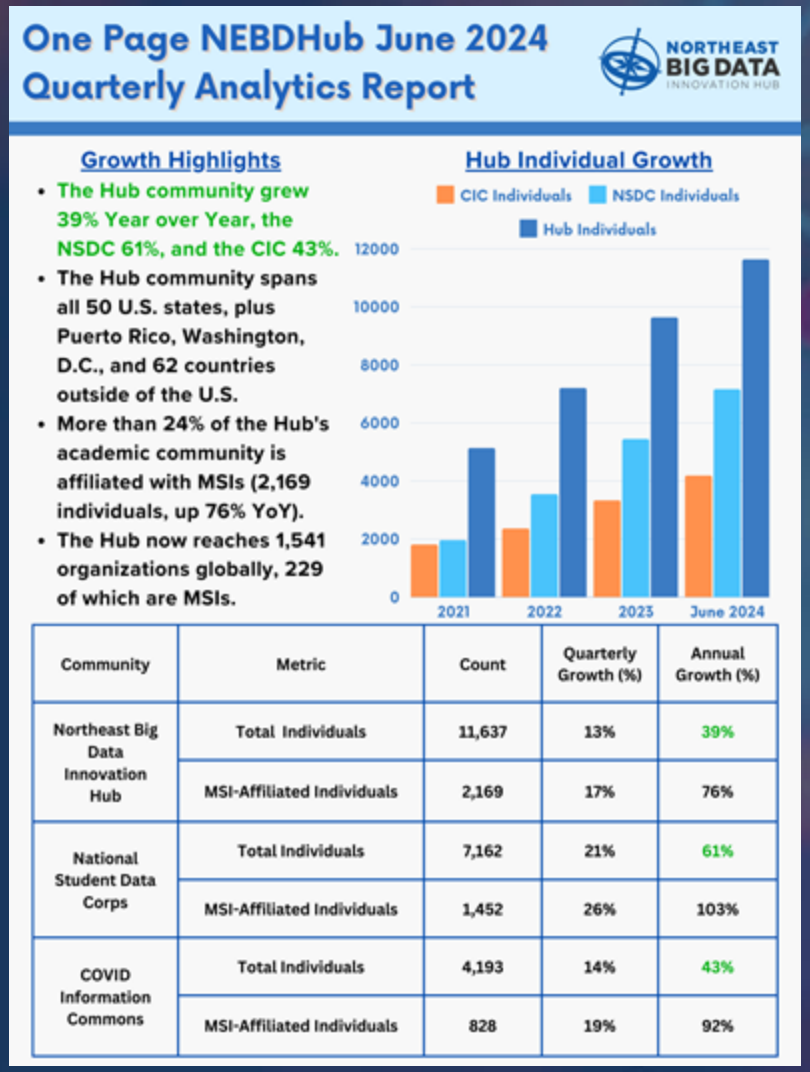
Data Science Related Seed Fund Projects included:

- Curricular Structures to Blend Data Science & the Digital Humanities
- Development of a Data Analytics Learning Community
- Algorithmic Justice and Responsible AI
- Using Data Science to Study Environmental Racism, Justice, and Policy

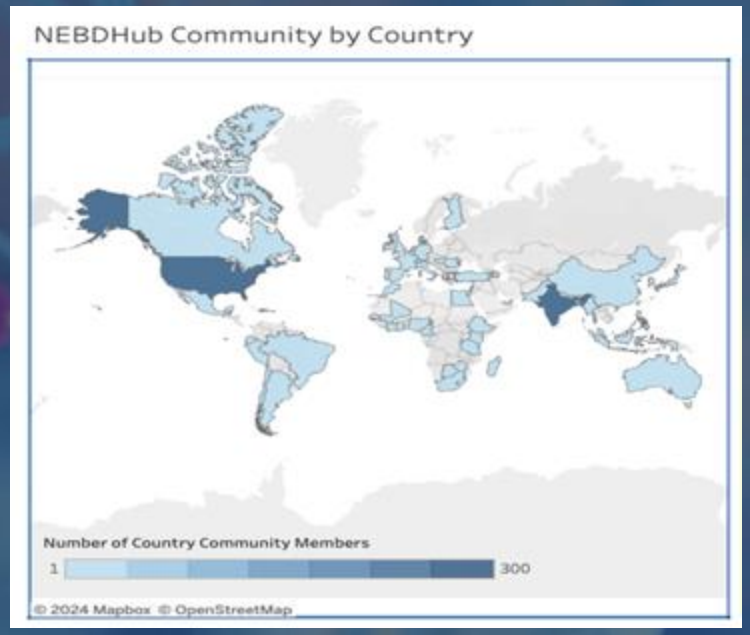
https://nebigdatahub.org/seed-fund-about/

NEBDHub includes 11,637 individuals from 1,541 organizations across the U.S. and 62 other countries





Community	Metric	Count	Quarterly Growth (%)	Annual Growth (%)
Northeast Big Data Innovation Hub	Total Individuals	11,637	13%	39%
	MSI-Affiliated Individuals	2,169	17%	76%
National Student Data Corps	Total Individuals	7,162	21%	61%
	MSI-Affiliated Individuals	1,452	26%	103%
COVID Information Commons	Total Individuals	4,193	14%	43%
	MSI-Affiliated Individuals	828	19%	92%



8X growth since 2019!

https://nebigdatahub.org/community-engagement/

National Student Data Corps

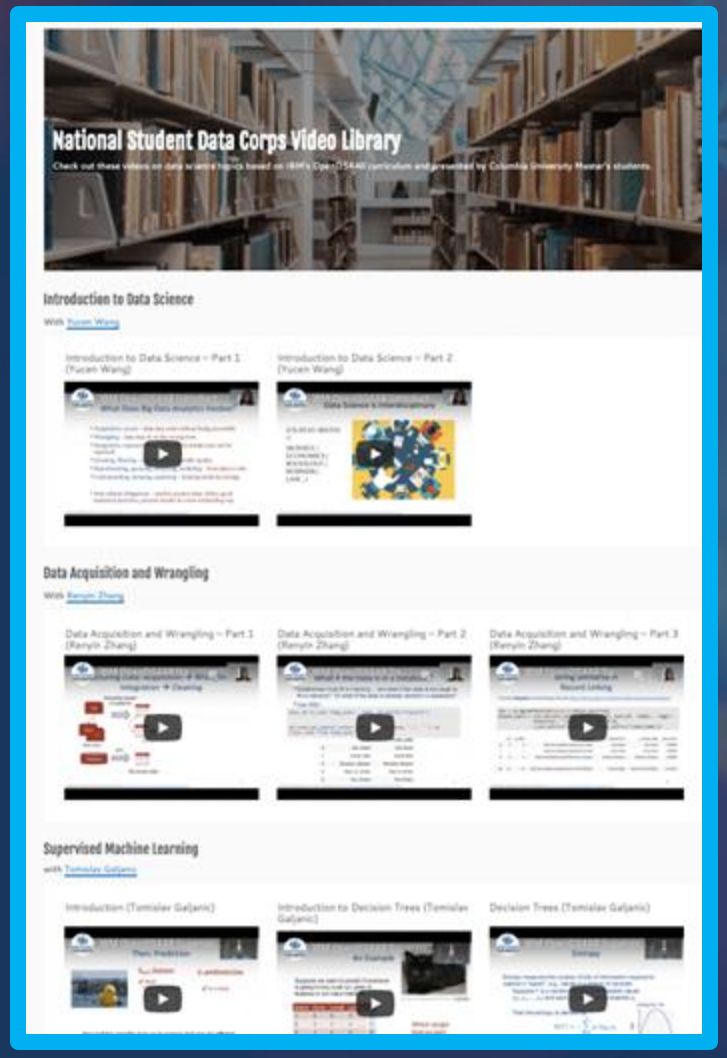
NSDC

The National Student Data Corps (NSDC) is a community-developed initiative that teaches data science fundamentals to students across the United States and around the world, with a special focus on underserved institutions and students.

We are grateful to the NSDC Founding Committee, which includes 24 members from academia, industry and nonprofits, who have come together to cultivate a community of diverse insights and perspectives to envision, develop, launch, and grow the NSDC portal and community, a groundbreaking and inclusive new program in data science.

https://nebigdatahub.org/nsdc

NSDC Provides Free Online Data Science Resources for Learners and Educators



Learn Data Science in 3 minutes or less with the NSDC Flashcards

Flashcard Topics

- Data Science Ethics
- Data Science Pipeline
- Data Visualizations
- Data Types
- Data Storytelling
- Ontologies
- … and more!

https://nebigdatahub.org/nsdc

Learn and practice data science and earn a certificate with the NSDC Data Science Projects!

Advanced SQL Queries

Analyzing Pandemic Response

Climate & Permafrost-fed Lakes

COVID-19 Data Dashboard

COVID-19 Data Visualization

Data Cleaning

Data Essentials

Image Classification

Intermediate SQL Queries

Intro to SQL Queries

Movie Recommendations

Movie Reviews Sentiment Analysis

Transportation Projects

Yahoo Finance & Stocks

https://nebigdatahub.org/nsdc/nsdc-data-science-projects/

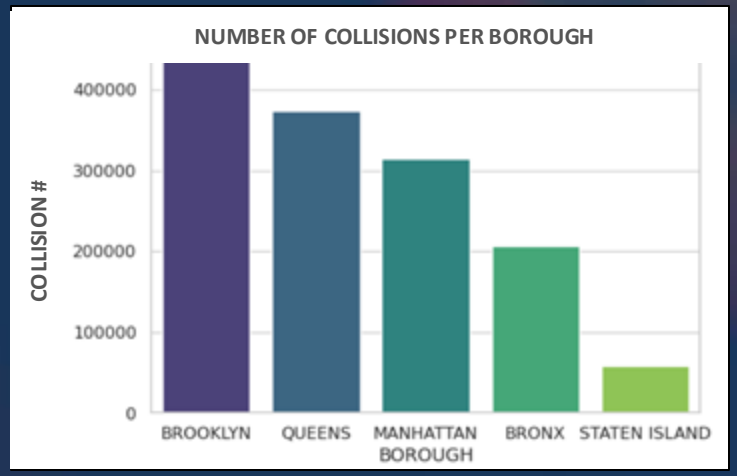
Fold Data Science Projects into your Curriculum!

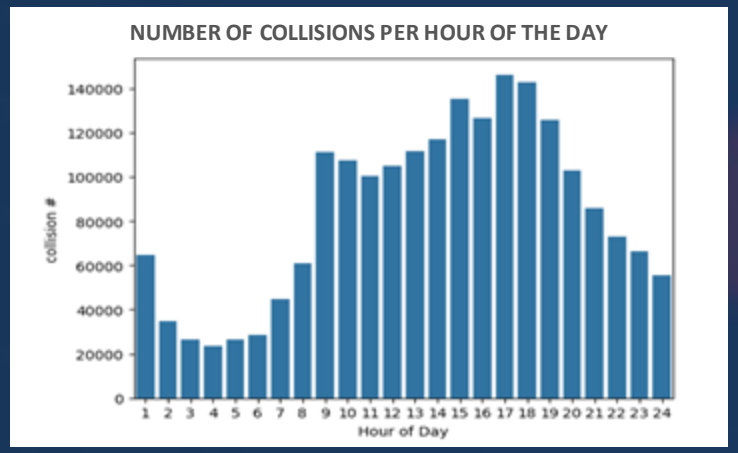
- **Transportation Data Science Project**
  - City College of NY, Columbia University, Bluefield State University, University of South Carolina, New York University, Rensselaer Polytechnic Institute, Purdue University are!

- **CIC Analyzing Pandemic Responses Project & CIC Data Essentials Project**
  - University of Washington, Tacoma is too!

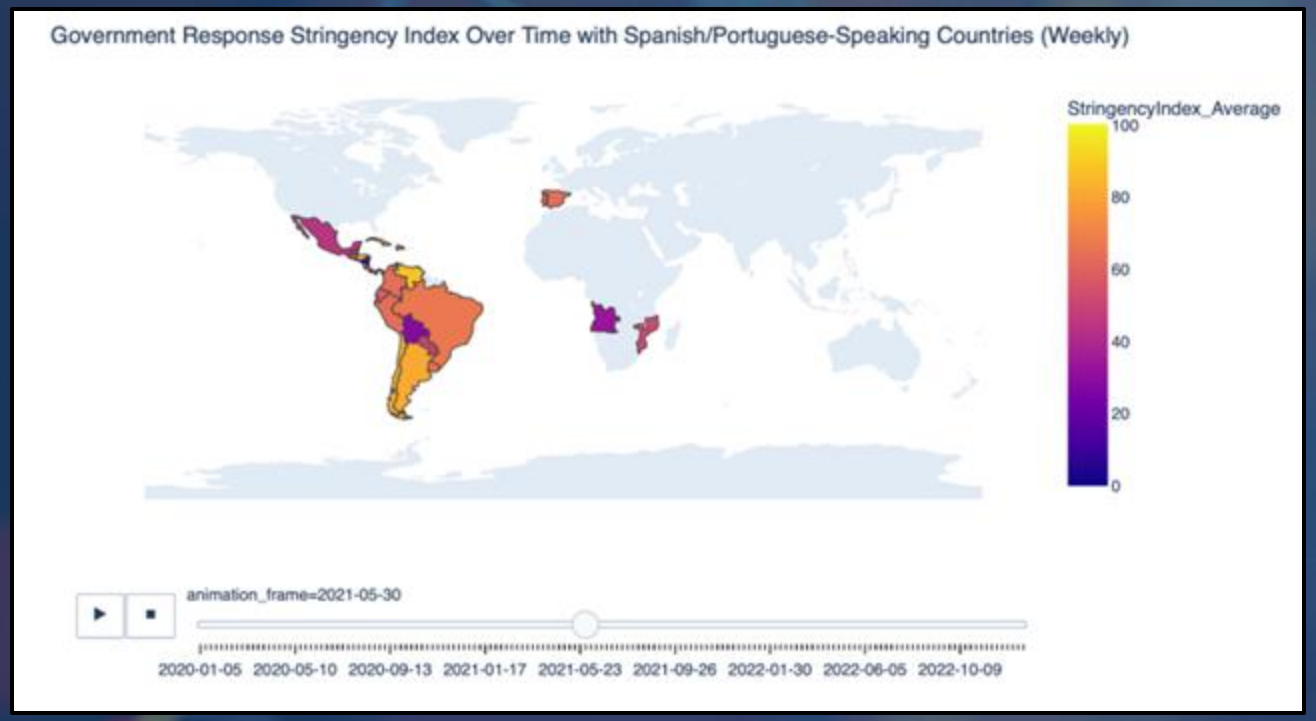
Create Real-World Data Visualizations!

Transportation Data Science Project





CIC Analyzing Pandemic Response Project



https://nebigdatahub.org/nsdc/nsdc-data-science-projects/

Data Science Resource Repository

The Data Science Resource Repository (DSRR) is a curated set of 1,100+ resources for learners, educators, researchers, career explorers, and professionals that promotes data science literacy and learning, including 200+ Spanish language materials.

Resources for Educators

- Data Science Curriculum
- Data Science Programs
- Books, blogs
- Open Datasets

Resources for Students

- Self-Guided Lessons
- Data Science Challenges
- Open Projects & Use Cases
- Data science comic books

https://nebigdatahub.org/data-science-resource-repository/

NSDC MasterClass Video Series

The NSDC MasterClass Video Series showcases experts who share how data science tools and techniques are being leveraged in various domains. Future episodes may highlight the intersection of data science and healthcare, finance, athletics, entertainment, technology, education, public policy, and more.

An Introduction to AI in Precision Oncology with Ian Maurer

Generative Artificial Intelligence with Svitlana Volkova

Data for Fame, Fortune & Championships with John Daniels

When Not to Use Machine Learning with Matthew Carbone

Interactive Massive-Scale Graph Analytics with David Bader

AI and DEIA: Wrong Problems, Wrong Solutions with Matthew Salzano

https://bit.ly/nsdc-masterclass

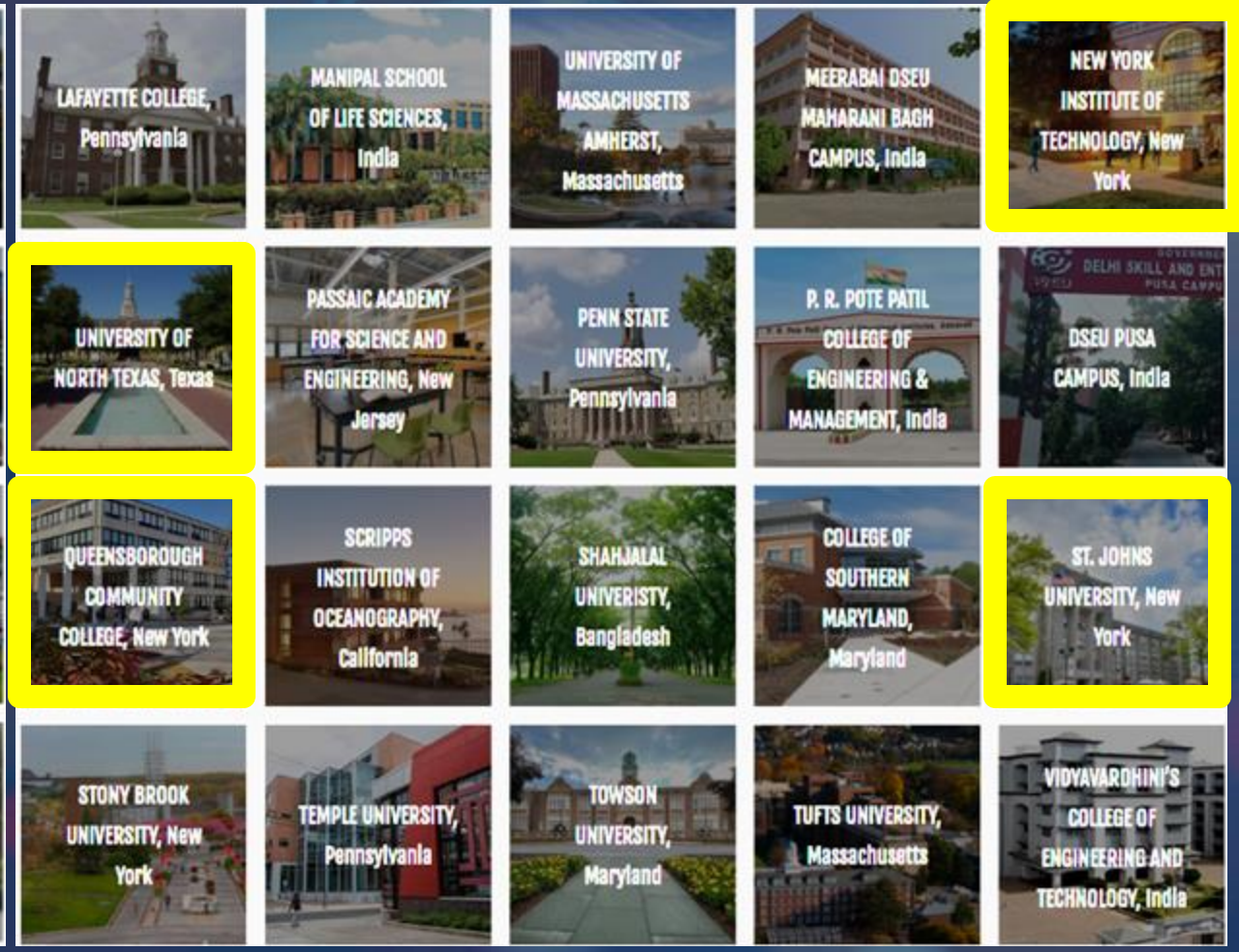
NSDC Data Science Career Panels

Inspirational Panelists!!

Watch past panels on demand here:
bit.ly/nsdc-panels
or read summaries of the panels here:
bit.ly/nsdc-summaries

Gain Leadership Experience and start an NSDC Chapter!

MSIs and HBCUs in Yellow



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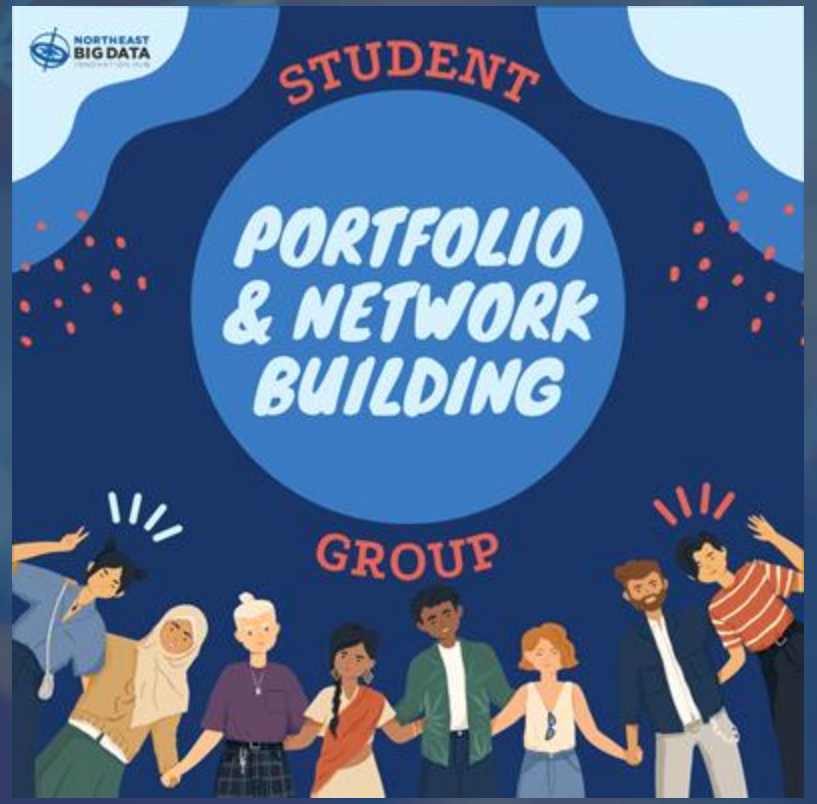
Student Portfolio & Network Building (PNB) Group

Four types of sessions and sets of online materials:

A: Peer networking - download the toolkit!
B: Resume and interview prep- download the toolkit!
C: Professional communications - October 25, 2024
D: Build your digital portfolio - January 10, 2025

Join sessions for free at any point in the cycle to build up your professional networking and interview skills.

Use the PNB LinkedIn Group to stay in touch between sessions!



https://nebigdatahub.org/pnb-group/

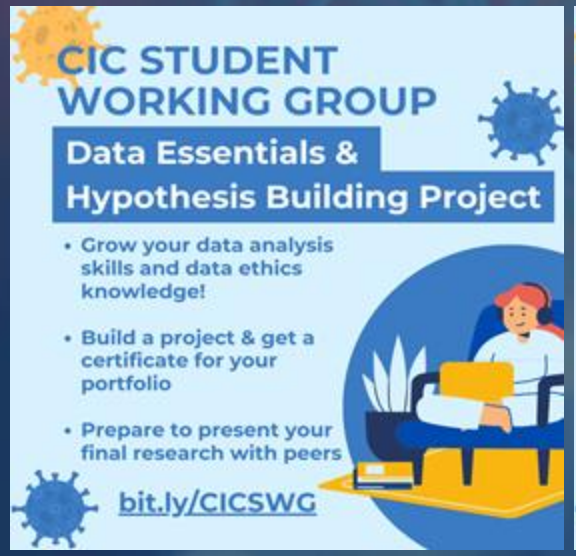
COVID Information Commons (CIC) Student Working Group

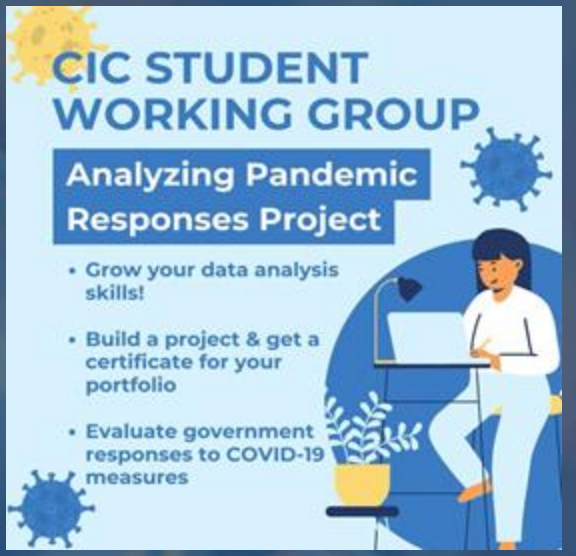
Four open-source, free COVID + data science projects for student learners of all backgrounds.

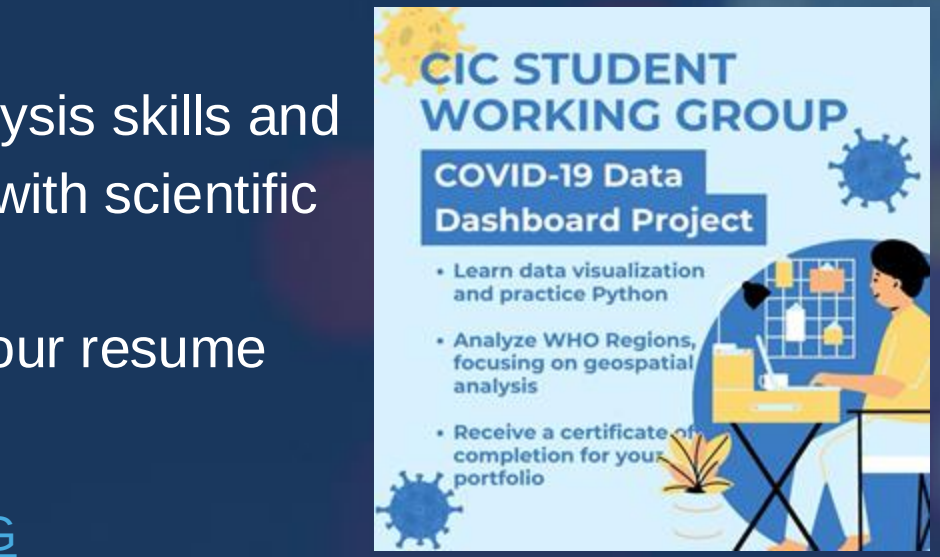
Next Meeting: Friday, November 1st

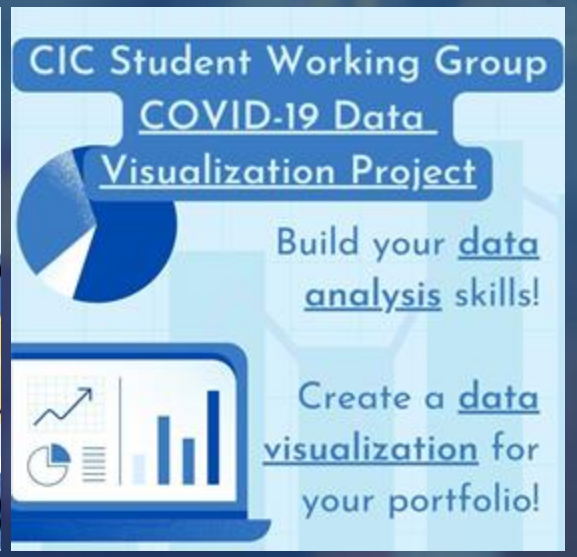
- Join the Working Group and attend monthly meetings with COVID researchers and students
- Strengthen your data analysis skills and gain practical experience with scientific research
- Receive a certificate for your resume and LinkedIn

bit.ly/CICSWG









Critical Success Factors for Work, Life & Leadership

- ***You can do it! Plan your life to achieve your purpose***
  - Determine your work and life goals and grow into your successful future

- ***Believe in Yourself, especially when others don't believe in you***
  - Mantra … "I Believe in Me"
  - After a speed bump … Be on YOUR side

- ***Build your support network –*** Mentors, Networking, Personal "cheerleaders"

- ***Build your skills***
  - Collaboration skills – teamwork, teambuilding, build an ark
  - Leadership skills
  - Communications skills – express your ideas – written, verbal, online
  - Technical skills – continually become an expert in your field
  - Business and financial skills – for work and life

- ***Follow your instincts, including living your values***

Florence DiStefano Hudson – My Professional Journey

Education:

- Princeton University BSE in Aerospace and Mechanical Engineering
- Executive Education Certificates Harvard and Columbia Universities

Professional Industry, Government and Academia Experience:

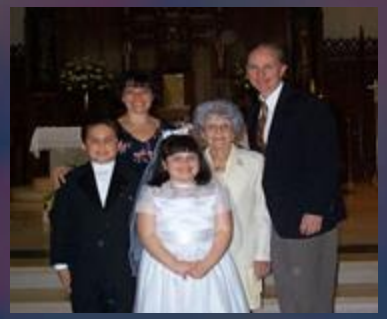
- NASA and Grumman Aerospace Engineer
- Hewlett Packard
- IBM Vice President Strategy and Marketing and Chief Technology Officer
- Internet2 Senior Vice President and Chief Innovation Officer,
- NSF Cybersecurity Center of Excellence Special Advisor
- FDHint, LLC, Founder and CEO
- IEEE P2933 Standards Working Group for Clinical Internet of Things and TIPPSS, Chair
- NSF Northeast Big Data Innovation Hub, Columbia University, Executive Director and Steering Committee
- Author and Editor with Elsevier, Springer Nature, IEEE, NACUBO, Wiley, Taylor & Francis, etc.

Board Experience:

- Nonprofits: JLEP, SHORE, SWE, IEEE, NeurON, ERN, etc. ; Industry - IEC Electronics (NASDAQ)
- Academia/Govt: Columbia, Princeton, Stony Brook Universities, Cal Poly, UC San Diego, NCI

https://fdhint.com/about/

Florence DiStefano Hudson – My Personal Journey



Family and Faith

Hillary Clinton

Mae Jemison
First US African American
Female Astronaut

Sally Ride, First US Female Astronaut

IBM VP and CTO - Mentor and BFFs

Princeton Mentees

Bonnie Dunbar, Astronaut

Alan Bean, Astronaut

U.S. Supreme Court
Justice Sonia Sotomayor

Nobel Laureate
Daniel Kahneman

My Princeton and SWE mentor, Yvonne Brill,
1st US female Rocket Scientist and President Obama

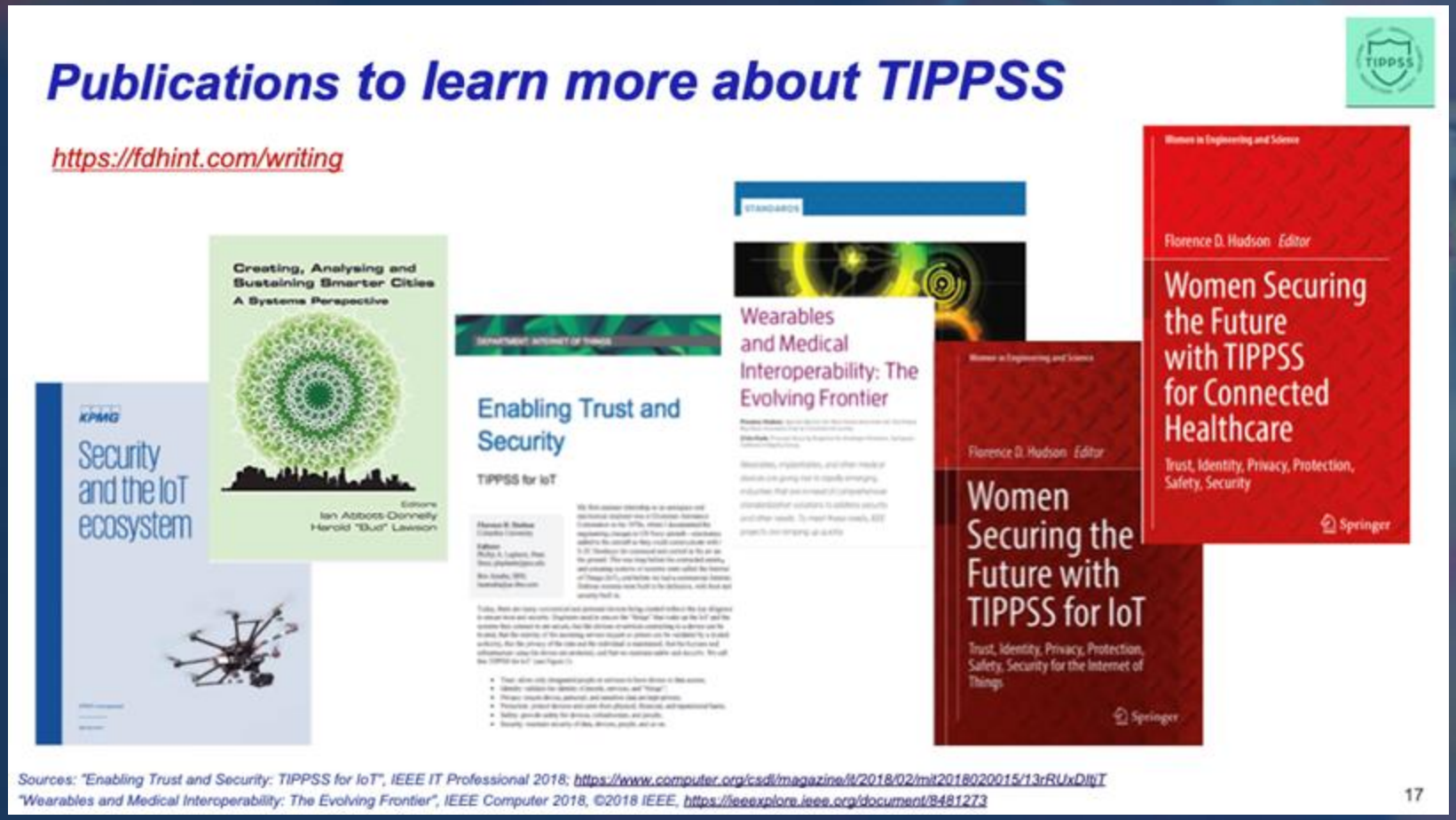
Key Learnings from My Journey

- **There are many speed bumps in life … we all have them**
  - Keep rolling over your own speed bumps … until you get where you're going
- **People who you think are supposed to support you, are not always on your side**
  - Professors, bosses, co-workers, family … don't be shocked
- **You can be a threat, just by being yourself - intelligent, educated, accomplished**
  - When you perceive it, it's there … build your wisdom
  - Find a role and place where you are respected for being yourself
- **Be confident enough to follow your instincts**
  - If it doesn't feel right, it's not … don't be afraid to walk away
- **Forgive, but don't forget …**
- **Find your happy place, your comfort zone, re-charge**
- **Never give up on your dreams …**

Create a vision and make it a reality: TIPPSS -

IEEE Standard for Trust, Identity, Privacy, Protection, Safety, Security

IEEE TIPPSS Working Group is a 2024 IEEE Emerging Technology Awardee



Create your path … follow your dreams … be a star

"Don't go where the path may lead,
go instead where there is no path and leave a trail."
- Ralph Waldo Emerson (1803-1882)

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A star is not something that flashes through the sky.
It stays in place and gives off a strong, steady glow.
A star always works at being a star.
Stars never take themselves for granted.
That's why they're stars.

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You can do it!

Thank you

Florence Hudson

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Founder & CEO, FDHint - https://fdhint.com/about

https://www.linkedin.com/in/florencehudson/

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