

Science and Research: My 'eis'mall' Experience

Shashi Raj Pandey, Ph.D. (CSE, Aug. 2021)

Date: 25 July, 2021



Science and Research: My '~~eis~~'mall' Experience

Shashi Raj Pandey, Ph.D. (CSE, Aug. 2021)

Date: 25 July, 2021



Science and Research: My 'small' Experience

Shashi Raj Pandey, Ph.D. (CSE, Aug. 2021)

Date: 25 July, 2021





- Disclaimer

- Some images presented in this ppt have been downloaded from (different) repositories freely available in the internet and solely be used for educational purpose, with no intention of copyright infringement.
- All copyright belongs to respective artists/organizations/firms.

About Me



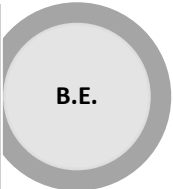
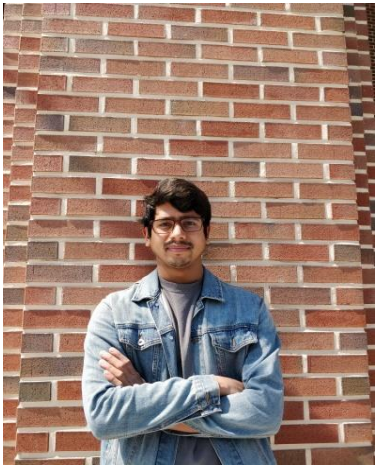
SLC: Adarsha Yog Hari
H.S.S., Lainchour



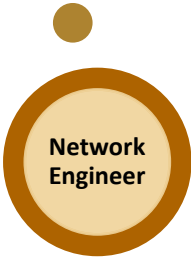
High school (Bio/Maths)



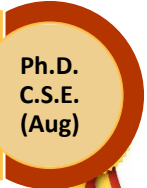
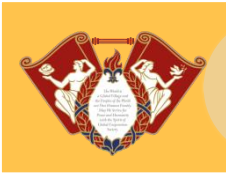
a sweet musical break
(of 1 years)



Electrical and Electronics, Communication



(2 years, 2 months)



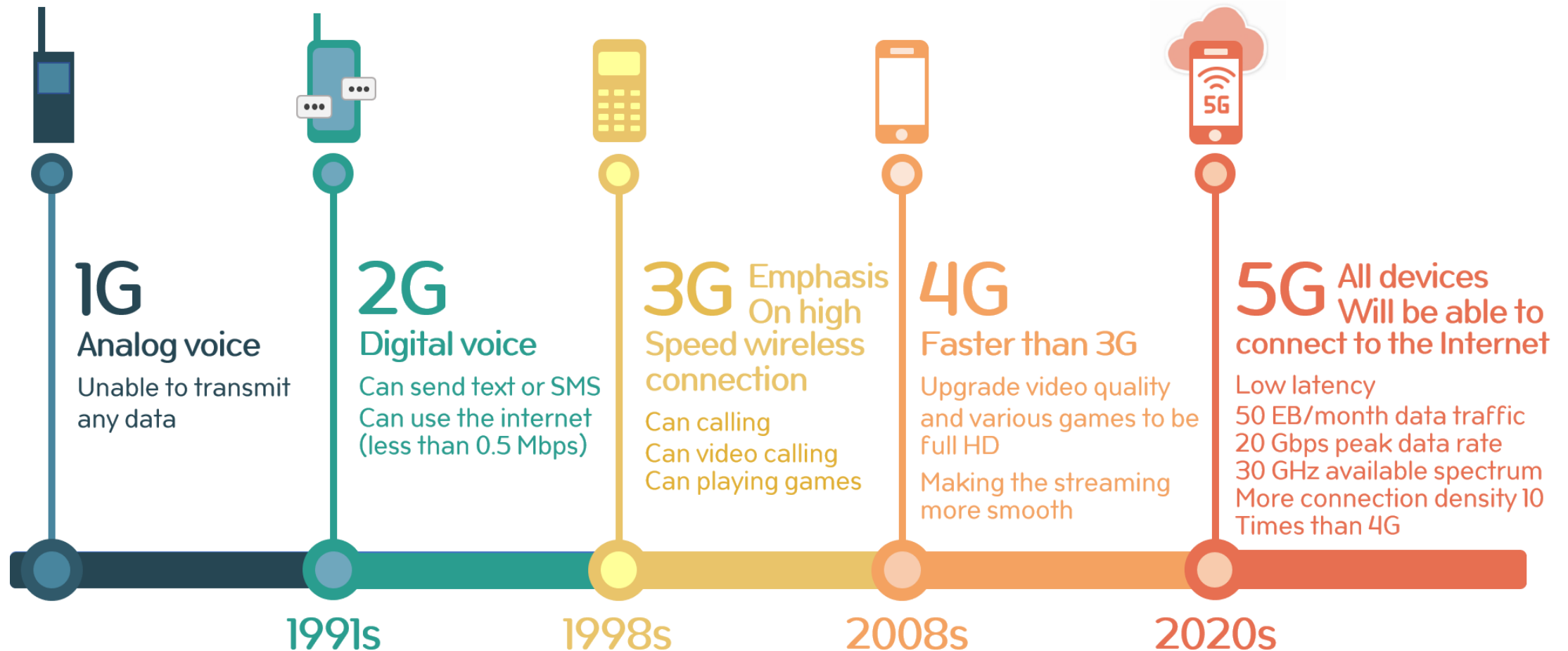
Kyung Hee University, South Korea
#8 Korea, # 329 in Asia

Network Economics | Game Theory |
Wireless Networks | Distributed ML |

Evolution of Communication Technologies

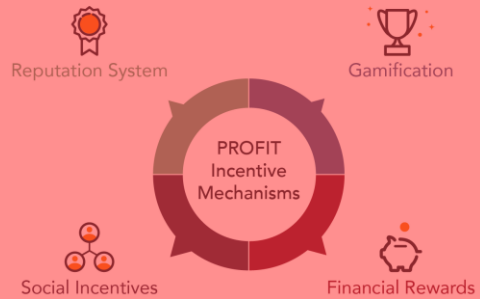


“कटुवाल”
“katuwal”

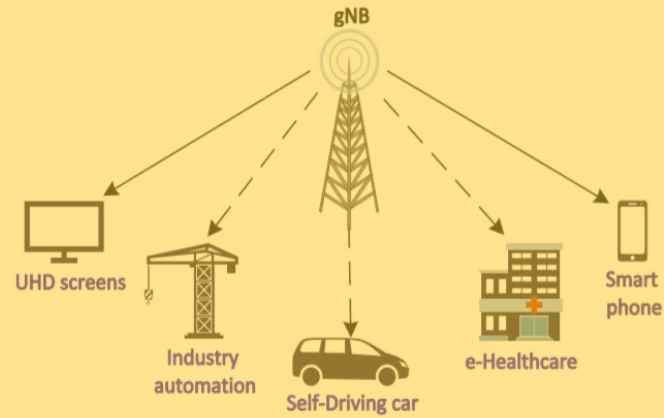


My Research

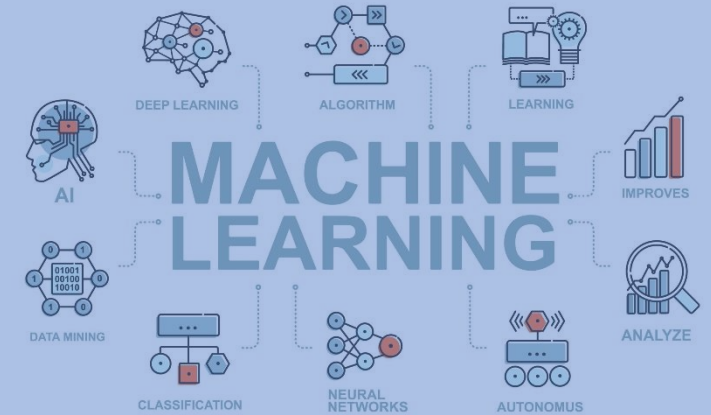
Economics



Wireless Networks



Machine Learning



Confusion loop!

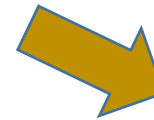
SEE →



Science (w/ math)



Management



Humanities





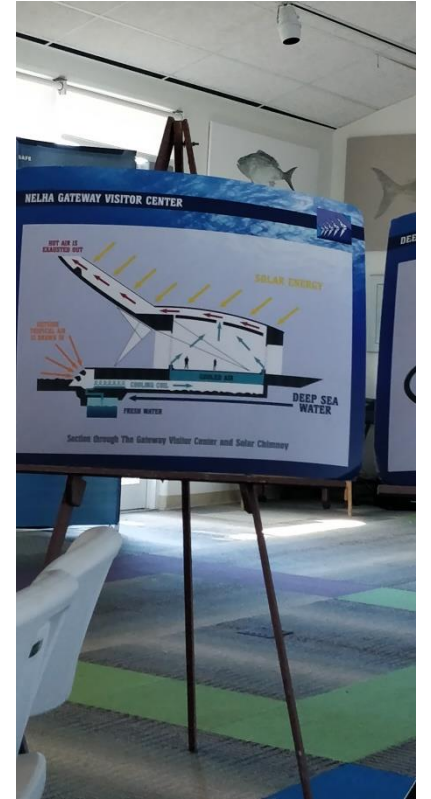
West Hawaii Explorations Academy



Open classrooms



Students at work



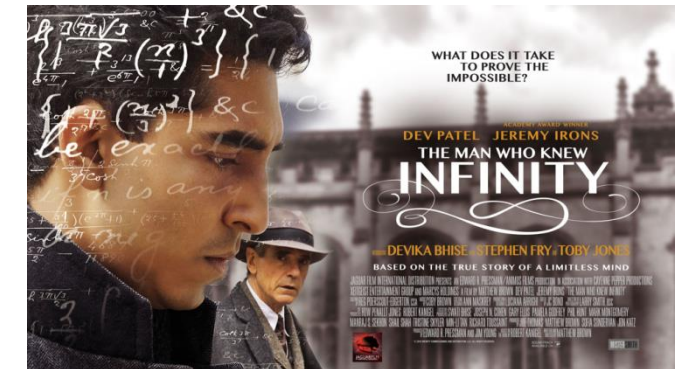
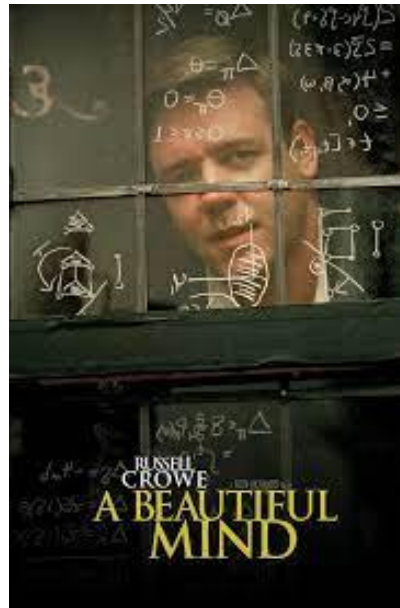
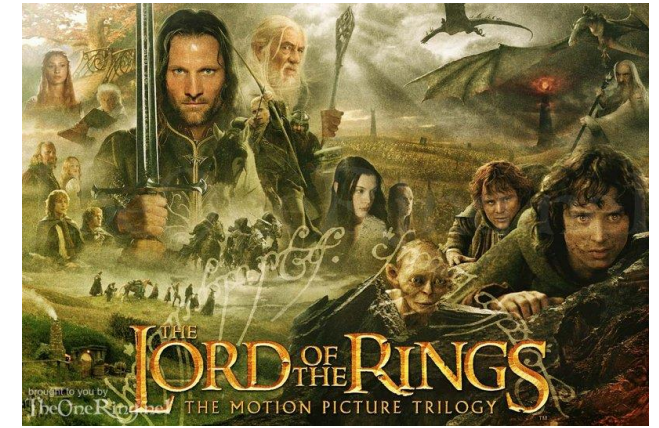
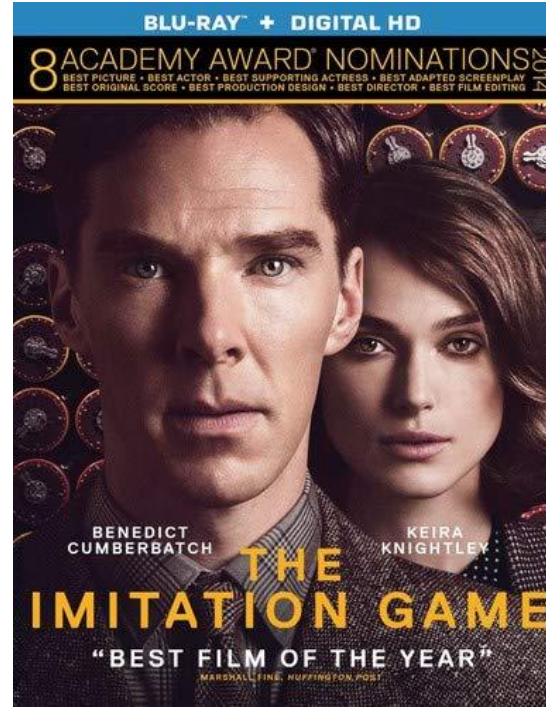
NELHA



*Computer-generated imagery (CGI)

<https://www.youtube.com/watch?v=fn3KWM1kuAw>

Have you watched these movies?



“STEM”

Science

Mathematics

Technology

Engineering

STEM to STEAM

Why STEM? Science Technology Engineering Mathematics



STEM workers enjoy premium wages

32% Males and 12% Females STEM graduates earn in the top income bracket (\$104 000 or above)



STEM workers experience relatively low unemployment

STEM unemployment rate is 3.7% vs non-STEM rate of 4.1%, 54% of companies are struggling to find computer science graduates.



STEM graduates have transferable skills

An average school leaver will have 17 employers in 5 industry sectors across their lifetime (average tenure is 3 years 4 months in a job).



STEM jobs are often within innovative fields

Working for progressive companies leads to interesting and challenging work. 75% of the fastest growing occupations require STEM skills.



STEM workers are in demand across the globe

In the US STEM jobs are growing 3 times faster than non-STEM. An additional 1.25M STEM jobs are required in the UK by 2020.

For more information, go to www.queenslandstem.edu.au

25 STEAM CAREERS to explore



- | | | |
|-------------------------------|--------------------------|-----------------------|
| 1 Mechanical & Civil Engineer | 10 Sound Engineer | 19 Photographer |
| 2 Architect | 11 Video Game Designer | 20 Sports Announcer |
| 3 Website/App Designer | 12 Medical Illustrator | 21 Pilots |
| 4 Modern Urban Planner | 13 Astrophysicist | 22 Astronaut |
| 5 Orthopedic Technologist | 14 Audio Developer | 23 Conservators |
| 6 Biomedical Engineer | 15 Graphic Designer | 24 Archeologist |
| 7 Product Designer | 16 Broadcast Technicians | 25 Scientific Imaging |
| 8 Animator | 17 Fashion Designer | |
| 9 Forensic Psychologist | 18 Interior Designer | |



By **2020** the demand for STEM professionals will add **OVER 1 MILLION** new STEM jobs within the United States workforce

STEM careers have higher job security and average a higher yearly income than most other fields



\$77,800/YEAR



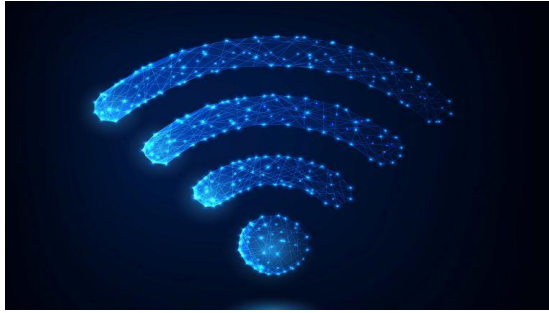
that said...

Understanding Science

Science (from the [Latin](#) word *scientia*, meaning "knowledge") is a systematic enterprise that [builds](#) and organizes [knowledge](#) in the form of [testable explanations](#) and [predictions](#) about the [universe](#).

-Wikipedia

The **big buzz!!**



Connectivity



SpaceX Starship



NASA's curiosity rover



Spot Robot Dog



Drones



Augmented/Virtual Reality



SOME BRANCHES OF SCIENCE AND WHAT THEY STUDY

HISTORY

what happened before us



Geography

The Earth and its people



ASTRONOMY

outer space



ECOLOGY

The environment



CHEMISTRY

Matter, elements and how they interact



PHYSICS

How things move
and how the Universe
behaves



MEDICINE

How to keep our bodies and minds healthy



Psychology

Our thoughts, feelings
and emotions



BIOLOGY

Living things



GENETICS

Why we look like our ancestors (or not)



PALEONTOLOGY

Fossils, dinosaurs and ancient forms of life



COMPUTER
SCIENCE

Computers ☺



©Elise Gravel

What do you want to be after studying science?

WHAT DO YOU WANT?



Hardware meets Software

“Applications (Apps) ”



Programming languages



Moving towards

Towards a “smart”
and “sustainable” world

Where are we now? Industry 4.0

Four Industrial Revolutions



1st Industrial Revolution
(Late 18th – early 19th Century)

Mechanization and the
introduction of steam and
water power



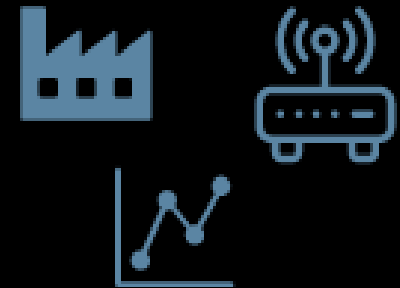
2nd Industrial Revolution
(Late 19th – mid 20th Century)

Emergence of new sources of
energy (electricity, oil, and
gas) and mass production.



3rd Industrial Revolution
(Second half of 20th Century)

Rise of electronics,
telecommunications and
computers

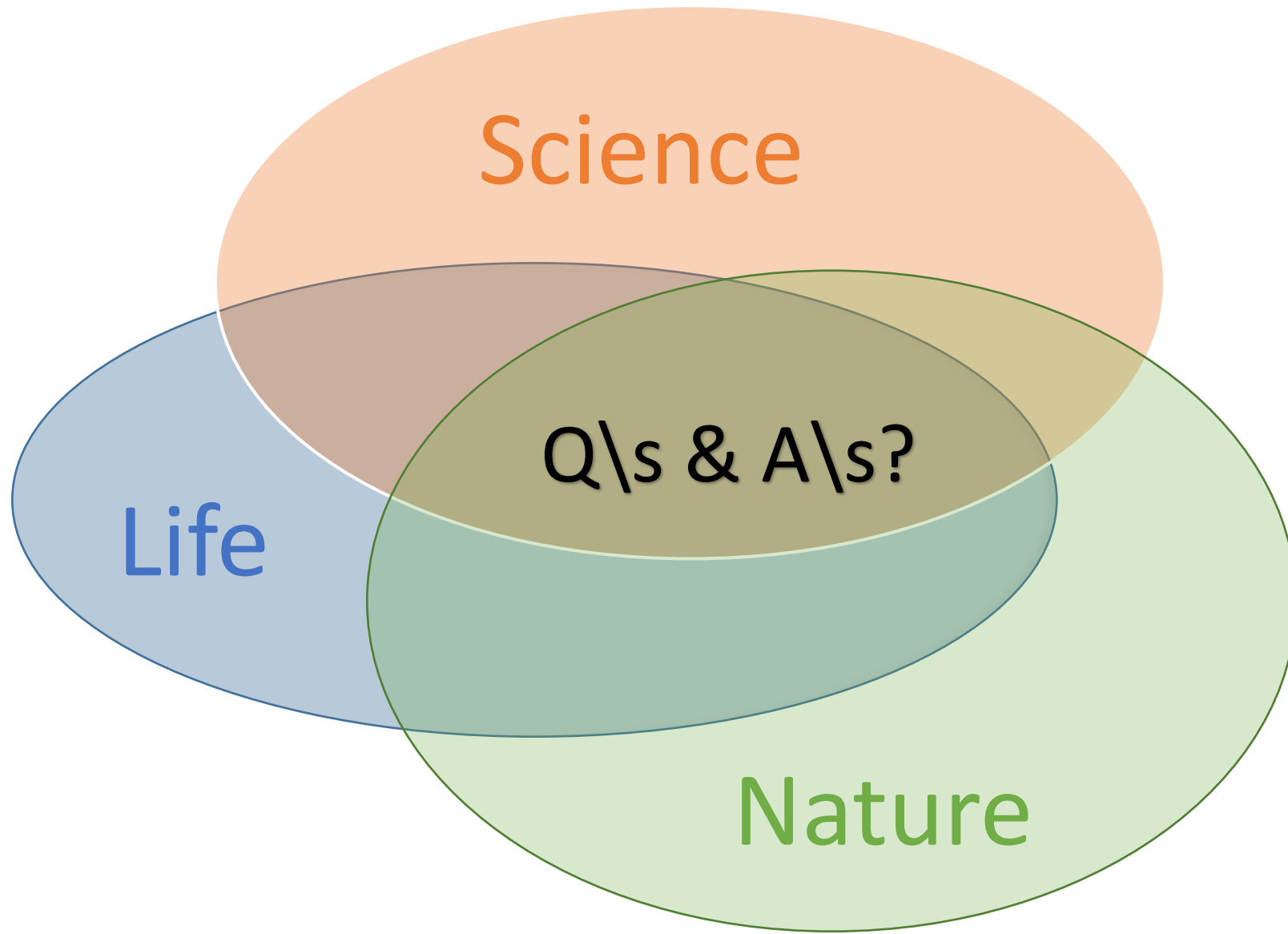


4th Industrial Revolution
(Early 21st Century)

Smart, inter-connected
cyber-physical systems
(IoT, AI, Big Data, ...)

Understanding Science and Research

“training a research-oriented mindset”

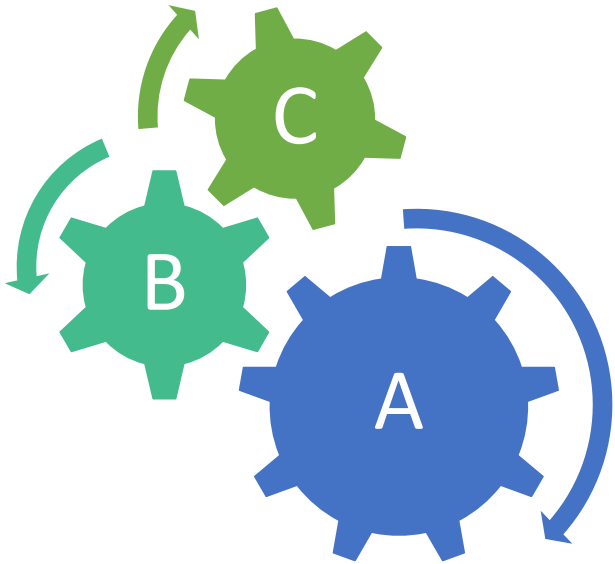


What?
Why ?
How ?

Motivation and Incentives



Interdisciplinary Thinking



Problem solving

Creating a product

“bring value”

Learning/training for the right set of tools

“getting skilled”

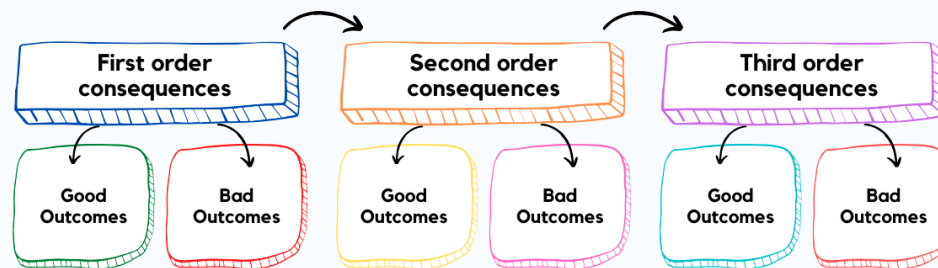
Critical Thinking

Self-reflection

Reasoning



Second Order Thinking



Curiosity and Perseverance

“Keep going”

Interaction
Involvements
Innovations

Team play

“we are a part of it”



Learning when to “return back”

“accepting alternative truth”

Building

Good habits

Character

Attitude



Procrastination and habitual avoidance



Misinterpreting goals



Casual distraction





Ignoring research ethics

Finally

Take away



Prioritize these:

- ✓ MOOCs (Coursea, Edx)
- ✓ Public Lectures
- ✓ Books/Blogs/Articles
- ✓ Podcasts
- ✓ Learning to code (and plant vegetables 😊)
 - ✓ How about trying to make your first webpage/app? 😊 😊
 - ✓ Mini-projects (DIY: Do It Yourself!)



For some who have mastered,
For some who have failed to-
There's a way out for everyone
Who has put their hearts into;

"Making an effort"

~

Hope it was useful. Thank you 😊



Do share me your feedbacks 😊

Email here: shashir101@gmail.com