Rebooting Learning in an Era of Cyber Regime & IOT
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Origin of the Universe
About 13.8 billion years

Big Bang  Bit Bang
Hominin .... Cybernin.......
He looked around
He struggled
He observed Sharp Claws, Sharp and Night Vision, Speed, and Wings.
He identified the need for survival, and the need to specialize.
He Discovered/Designed Tools, Fire, Metal, Wheel, and Power.
He fulfilled his needs

Hunger

Shelter

Clothes

Therefore, Survival became possible
He Learned

From Experience
From Nature
Trial & Error
Experimenting
He Documented

Oral Traditions

Cave Paintings

Written Documents

Rituals
And the story goes on .......... 
He Evolved 
He Improvised
INDUSTRIAL REVOLUTION TIMELINE

1 Industrial Revolution
Water and steam power is used to create mechanical production facilities

2 Industrial Revolution
Electricity lets us create a division of labor and mass production

3 Industrial Revolution
IT systems automate production lines further

4 Industrial Revolution
Internet of Things and cloud technology automate complex tasks

1800 1900 2000 TODAY
INDUSTRIAL REVOLUTION

1\textsuperscript{st} - Used water and steam power to \textit{mechanize} production.

2\textsuperscript{nd} - Used electric power for \textit{mass} production.

3\textsuperscript{rd} - Used electronics & IT to \textit{automate} production.

4\textsuperscript{th} - Building on \textit{digital} revolution characterized by fusion of technology. Blurring lines between physical, digital and biological domain.

“\textit{4\textsuperscript{th} is the biggest, most disruptive, profoundly affect us all}.”
"THE FOURTH INDUSTRIAL REVOLUTION WILL AFFECT THE VERY ESSENCE OF OUR HUMAN EXPERIENCE."

KLAUS SCHWAB
FOUNDER & EXECUTIVE CHAIRMAN,
WORLD ECONOMIC FORUM
Fusing the physical, digital and biological worlds

Intelligent Connected World
Interesting time
“Digital is the main reason, just over half of the companies on Fortune 500 have disappeared since the year 2000”.

Pierre Nanterms (CEO, Accenture)
Fourth Industrial Revolution

- Extinction of routine and unskilled job
- Impact on Difficult Geographies like Uttarakhand
- Rebooting Learning, therefore, is crucial
UNESCO’s understanding of education quality


- Learning to know
- Learning to do
- Learning to live together
- Learning to be
Maslow's need redefined in FIR

- WIFI
- BATTERY

- PHYSIOLOGICAL
  - Food
  - Water
  - Shelter
  - Warmth

- SAFETY
  - Security
  - Stability
  - Freedom from Fear

- BELONGING - LOVE
  - Friends
  - Family
  - Spouse
  - Lover

- SELF-ESTEEM
  - Achievement
  - Mastery
  - Recognition
  - Respect

- SELF-ACTUALIZATION
  - Pursue Inner Talent
  - Creativity
  - Fulfillment
The Sophia Era
Hi Mr. Watson : The IBM Way
```
Adapting to changing environment ensures survival

"It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change."

-Charles Darwin, 1809

DIGITAL DARWINISM IS THE EVOLUTION OF CONSUMER BEHAVIOR WHEN SOCIETY & TECHNOLOGY EVOLVE FASTER THAN YOUR ABILITY TO ADAPT
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Thank you for being late

THANK YOU FOR BEING LATE
AN OPTIMIST'S GUIDE TO THRIVING IN THE AGE OF ACCELERATIONS

THOMAS L. FRIEDMAN
AUTHOR OF THE WORLD IS FLAT
Machine learning, 3-D Printing: A cottage industry at the backyard, Augmented reality, AI / IA, Computational thinking, Robotics
Learn faster and govern smarter

Source: “Thank You for Being Late,” Thomas Friedman
WWW: Towards the end of the 20th century

The distance factor annihilated! Flatter world

Acceleration & faster systems: WEB 2.0
Emergence of Digital Class

Digital Natives, Immigrants
Time of Google Guru, Wiki Mausi & Khan Chacha
Learning in digital era

- Brick & mortar giving way to digital blocks
Free Online Courses
Advance Your Career. Improve Your Life.

What do you want to learn?

Search:

POPULAR SUBJECTS

- Computer Science
- Data & Statistics
- Business & Management
- Language
Take the world's best courses, online.

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You can earn a Master's Degree in Business, accounting, data science, or management online. Coursera

Top Specializations

Google IT Support Professional Certificate

Deep Learning

Python for Everybody

Data Science

Applied Data Science with Python
Free courses

Produced by The Open University, a world leader in open and distance learning, all OpenLearn courses are free to study. We offer nearly 1000 free courses across 8 different subject areas. Our courses are available to start right away.

Subjects that inspire you

We have eight subject categories for you to explore containing thousands of free resources.

All our free courses

Why study a free course on OpenLearn?
MOOCs

• Udacity  “Founded by three roboticists who believed much of the educational value of their university classes could be offered online for very low cost. A few weeks later, over 160,000 students in more than 190 countries enrolled in their first class, "Introduction to Artificial Intelligence." 23,000 students passed the online course (253 got perfect scores).

 Professor Thrun has taught more students the subject than all of the rest of the computer science professors in the world.
 The 23,000 who passed the course represent more students than most faculty will teach in their career.
 Out of the 200 Stanford students attending the traditional course, only 41 were in class at the end of the course.
 The other 159 opted for the online asynchronous presentation.
 410 online students outperformed the top Stanford student!
 Students are teaching students (Q&A ranking system).
 Students themselves translated the class for free from English into 44 languages.
 The on-campus passing rate was the highest ever.
Project deadline approaching

Hi Durgesh,

We are excited to see your progress in the Machine Learning Foundation Nanodegree program.

Your project Test A Perceptual Phenomenon is due for submission on Sunday, August 5, 2018. Hope you are on track to complete this.

Make sure you submit your project as per the deadlines to stay on track with your Nanodegree program. Timely submissions will allow you to learn in an organised and timely manner.

Please adhere to Udacity’s Honor Code when you submit your work.
NPTEL (National Programme on Technology Enhanced Learning) is a joint initiative of the IITs and IISc. Through this initiative, we offer online courses and certification in various topics.

Online course: Free for all, Certification exam: For a nominal fee. Learn anytime, anywhere! Only requirement: Interest and enthusiasm to learn :)

The start/end dates and exam dates are as follows:

- 4 weeks course: Start date: 5 Feb 2018 End date: 2 March 2018
- 8 weeks course: Start date: 5 Feb 2018 End date: 30 March 2018
- 12 weeks course: Start date: 22 Jan 2018 End date: 13 April 2018

Last date of Enrollment for 4 and 8 week courses are extended till Feb 12, 2018 (5:00 PM)

Exam Date

Exam dates for all courses: 28/29 April (2 sessions per day: FN- 9 AM to 12 noon AN-2 PM to 5 PM)

Enrollments for all the courses are open now for enrolment and will be closed on start date of the course. Details about each course can be found in the Course introduction page - please click on any course to know more.

CLICK HERE TO VIEW THE 226 COURSE LIST TO BE OFFERED IN JAN-APRIL 2018

Final Exam slots:

CLICK HERE TO VIEW THE LIST OF COURSES IN FORENOON SESSION (9:00 AM - 12:00 PM)
Learning Management System
Content Management System

www.joomla.org
3D Human Anatomy

http://www.visiblebody.com/
3D Authoring

http://www.sketchup.com/
Share Videos

http://www.youtube.com/

http://www.teachertube.com/
Micro-Blogging?

http://twitter.com/
Lists of Nobel Prizes and Laureates

Choose a list

All Educational Productions
Short about the Nobel Prize
Alfred Nobel's Life and Work
Teachers' Questionnaire

Educational

You don't have to be a genius to understand the work of the Nobel Laureates. These games and simulations, based on Nobel Prize-awarded achievements, will teach and inspire you while you're having FUN!

Blood Typing Game
HUMAN BLOOD GROUPS 2012 Winner of the Best Game Category by Swedish Learning Awards. Try it out and learn about human blood types and blood transfusions!

+ Play the Blood Typing Game!
Learn Vocabulary

For each answer you get right, we donate 10 grains of rice through the World Food Programme to help end hunger.

mall means:
shopping center
queen
policeman
mama

2820990 grains of rice donated yesterday.
Over 82 billion grains donated to date (see totals).

http://www.freerice.com/
Create Online Polls

Surveys your way.

Create surveys and polls that match your brand, budget, and vision.

See Plans & Pricing
Sign up for a free account now!

Some of our customers
BBC Microsoft LEGO Pixar
Forbes THE WALL STREET JOURNAL
NOKIA IBM The New York Times

Pay monthly or yearly. You’re the boss.
No limits on content creation or votes
Collect feedback from web, email, iPad or social.
Generate and share easy-to-read reports.

http://www.polldaddy.com/
Typing Skills

Peter's Online Typing Course

http://www.typing-lessons.org/

http://www.rapidtyping.com/
Reading Skills

So Much to Read . . . So Little Time!

ZAP Reader is a web based speed reading program that will change the way you read on your computer. Current beta testers report reading twice as much in half the time—that's a 300% increase in reading speed, without any loss in comprehension! There is nothing to install, it works with most popular browsers, and it's totally free!

Reader - If you have some text that you want to read fast, copy it onto your computer's clipboard, click this link, and follow the instructions to Zap read that text.

Settings - By default, Zap Reader allows you to read at 300 words per minute, one word at a time. Use the settings feature to configure Zap Reader with your own preferences.

Tools - Zap Reader is designed to be easy to integrate with other programs. Find out about browser bookmarks, program add-ins, and other integration tools here.

Click the "Play" button below for a quick 2-minute tutorial on how to use Zap Reader.

http://www.zapreader.com/
IT Skills

www.w3schools.com
Learn Languages

http://www.mangolanguages.com/
Explore the World

Google Earth

Get the world’s geographic information at your fingertips

Take a virtual journey to any location in the world. Explore 3D buildings, imagery, and terrain. Find cities, places and local businesses.

http://earth.google.com/
Explore the Universe

Experience WorldWide Telescope Eclipse Release

Immerse yourself in a seamless beautiful environment.

From web to desktop to full dome planetarium, WorldWide Telescope (WWT) enables you to explore the universe, bringing together imagery from the best ground and space-based telescopes in the world and combining it with 3D navigation. Experience narrated guided tours from astronomers and educators featuring interesting places in the sky. You can research and import your own data and visualize it, then create a tour to share with others.

A web-based version of WorldWide Telescope is also available. This version enables seamless, guided explorations of the universe from within a web browser on PC and Intel Mac OS X by using the power of HTML5 or Silverlight.

Join our forum to discuss WorldWide Telescope, get help and share content here.

Worldwide Telescope HTML5 Web Control SDK Now Available

Now you can utilize WorldWide Telescope's powerful display engine in your own HTML5 application. You can support phones to tablet to desktops on Windows, Linux, iOS, MacOSX and more. The new HTML5 Web Control is a replacement to our existing Silverlight Web control that offers most of the capabilities of the existing control in an almost universal package. Now you place your images and data overlaid on any of WWT's all sky backgrounds with just a few lines of code. Samples and a porting guide are available, as well as full SDK documentation.

Click here for more details.

http://www.worldwidetelescope.org/
Digital Sources

- iTunes U
- Hippocampus
- Edu- YouTube
- MERLOT
- Open Textbooks (e-books)-
  - Gutenberg
  - Wikibooks
  - Archives.org
‘Hole in the wall’ has become passe!
- Dr. Sugata Mitra, Chief Scientist at NIIT, 1982

It’s time to remove the wall!!
GOI Initiatives to reach the unreachable

1. **SWAYAM**
   Study Webs of Active Learning for Young Aspiring Minds *MOOCs*

2. **SWAYAM PRABHA** *for educational excellence*
   *DTH Project*

Both Initiatives soft launched on August 15, 2016 by MHRD
Single-window, Centralized, Integrated, Multi-lingual, User-friendly platform enabling module based, efficient learning
Approach

Four quadrant approach:

I. **Quadrant-I is e-Tutorial**; which shall contain: Video and Audio Content in an organized form, Animation, Simulations, video demonstrations, Virtual Labs, etc, along with the transcription of the video.

II. **Quadrant-II is e-Content**; self instructional material, e-Books, illustrations, case studies, presentations etc, Web Resources such as further references, Related Links, Open source Content on Internet, Video, Case Studies, books including e-books, research papers & journals, Anecdotal information, Historical development of the subject, Articles, etc.

III. **Quadrant-III is the Discussion forum** for clarifications of general misconceptions and setting up the FAQs on a near real time basis by the Course Coordinator or his team.

IV. **Quadrant-IV is Assessment**, Problems and Solutions, which could be in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions,
Open Educational Resource

- Technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes. They are typically made freely available over the web or the internet. Open Educational Resources include learning objects such as lecture material, references and readings, simulations, experiments and demonstrations, as well as syllabi, curricula and teachers’ guides (UNESCO 2002 Forum on the Impact of Open CourseWare for Higher Education in Developing Countries)
Open Educational Resource

- **Digitised materials** offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research.’ (OECD)

- ‘**OERs** are educational materials and resources offered freely and openly for anyone to use and under some licenses to re-mix, improve and redistribute.’ (Wikipedia)
54% of MIT OCW traffic is non-US;
43% of the visitors are self-learners;
35% of the freshmen are aware of MIT’s OCW before attending the university and
OER Journey at UOU

2011 year
Hosted International Conference where for the first time issue related to OERs were discussed and shared

2012 year
Nomination of Faculty for OER training and concept note was presented

2014 year
OER Cell was created
Sensitization Workshops
Committee to draft Institutional OER policy constitutes

2015 year
Project on Development of SLM as OERs

2016 year
OER Policy adopted
8 courses launched as OERs

2017 year
OER repository
Moodle LMS
SLM for PG Diploma in Cyber Security was developed as OER
Moodle Learning Management System
Navigation

Home
- Site pages

Courses
- Self Learning Material (SLM)
- Open Educational Resources (OER)

Online Courses
- Certificate in Computer Application (CCA)
- Certificate in e-Governance and Cyber Security (CEGCS)

Security

Course categories:
- Online Courses

Search courses:

Certificate in Computer Application (CCA)
Certificate in e-Governance and Cyber Security (CEGCS)
Fundamentals of Cyber Security
E-Content generation-
Uttarakhand Knowledge Bank : Android Application
Web-based Mentoring Programme
• Skilling & Training
https://www.ixambee.com/uttarakhand
Internet of Things (IoT): Enabling communication between devices, people & processes to exchange useful information & knowledge that create value for humans

Term first proposed by Kevin Ashton in 1999

Source: The Economist

Source: Ericsson, June 2016
People Connecting to Things

ECG sensor

Motion sensor

Motion sensor

Motion sensor

Internet
BLOCK DIAGRAM OF WATER MONITORING SYSTEM

- Water Body
- Temperature Sensor
- PH Sensor
- Turbidity
- TDS
- Microcontroller Arduino
- LCD
- GSM Module
- Monitoring Center
Device Testing at Bhimtal Lake
Technological trends

- Desktop Computers
- Handheld Devices
- Smart Systems
- Artificial Intelligence
- Machine Learning
- Virtual Reality
- Augmented Reality
- IOT
VIRTUAL REALITY (VR)
- Fully artificial environment
- Full immersion in virtual environment

AUGMENTED REALITY (AR)
- Virtual objects overlaid on real-world environment
- The real world enhanced with digital objects

MIXED REALITY (MR)
- Virtual environment combined with real world
- Interact with both the real world and the virtual environment
Objective

• Introduction to cyber crime
• Terminologies
• What comes under cyber crime?
• Why it is important?
• Various techniques.
• Guidelines for cyber security

Cyber Security is everyone's responsibility...

Protect your information at home and at work!

CYBER SECURITY
• Digital Readiness, Engagement
• Digital leadership
• Digital eco-system

• Data security, Privacy: Is big brother watching?

&

For all that
Rebooting learning is indispensable
New Normal in Cyber Era

Alexa from Amazon
Siri Controlled Echo
Google Home
Hello Professor,

Soon your course about Learnometrics starts again. Since last time I found 16 new relevant learning objects created or recommended by your peers. Do you want to review them now?

Your Chamilo wizard
To give shape to fathomless creativity of mankind....

Future?

VUCA world preparedness
Advantage Uttarakhand
We are all now connected by the Internet, like neurons in a giant brain.

Stephen Hawking
“The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.”

Alvin Toffler