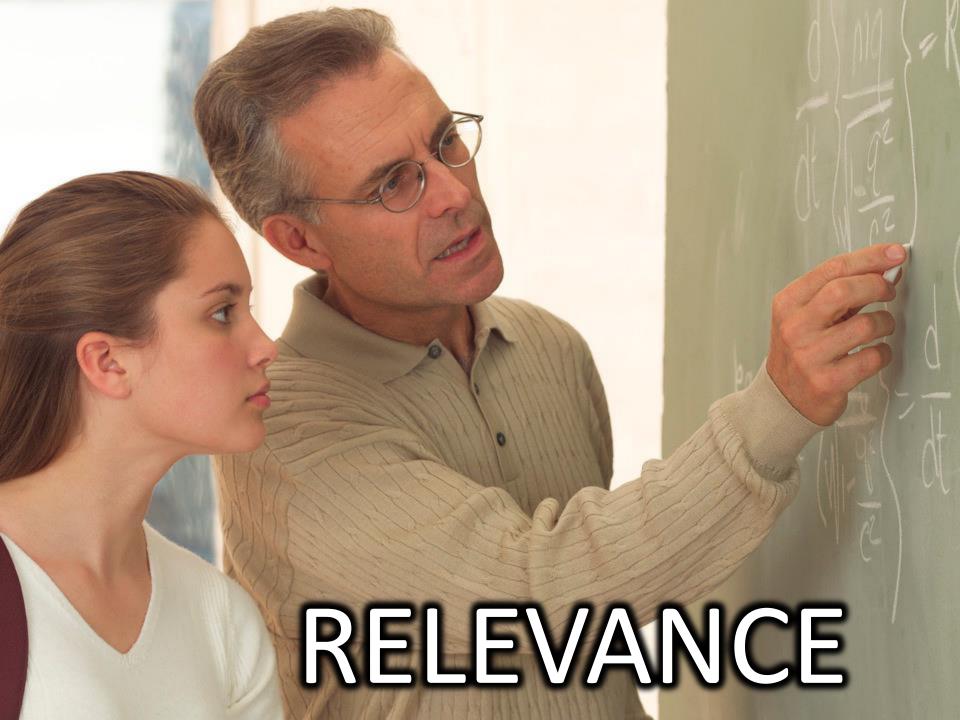
The STEM Professions in the 21st Century Your Daughter is Worthy of Entering this Space October 10, 2015

Douglas Askegard, EE IEEE Buenaventura Professional Activities Chair IEEE Buenaventura Robotics Chapter Chair dougaskegard@ieee.org



MY

PIECE

LEVERAGES THE WORK OF MANY

CONNECTED

VIRTUALLY



CONTINUOUSLY LEARNING







YES TO

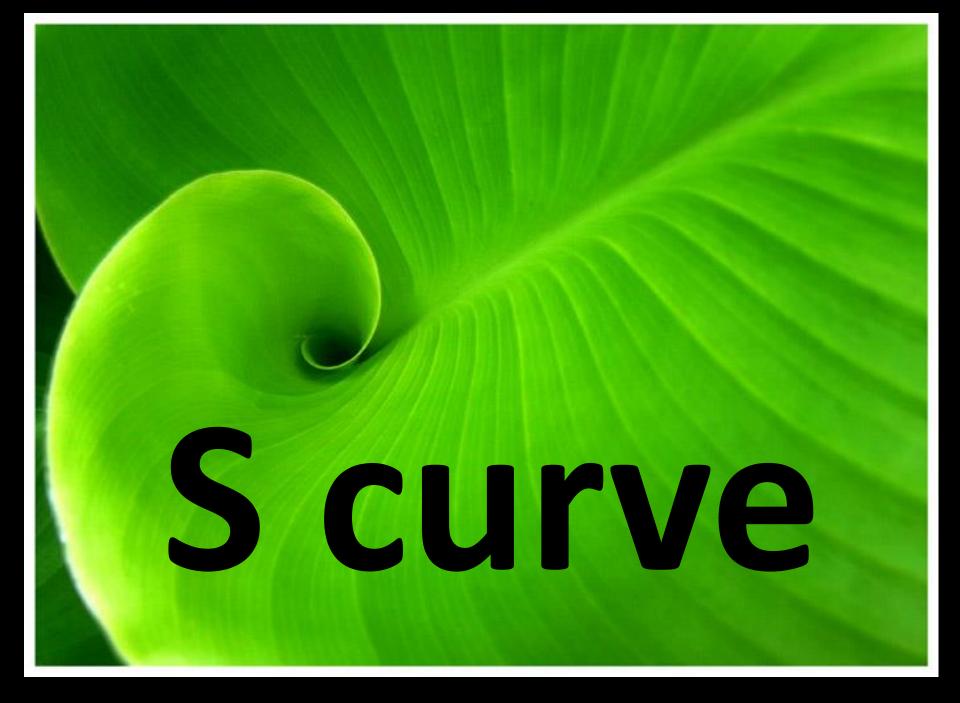
COLLEGE EDUCATION

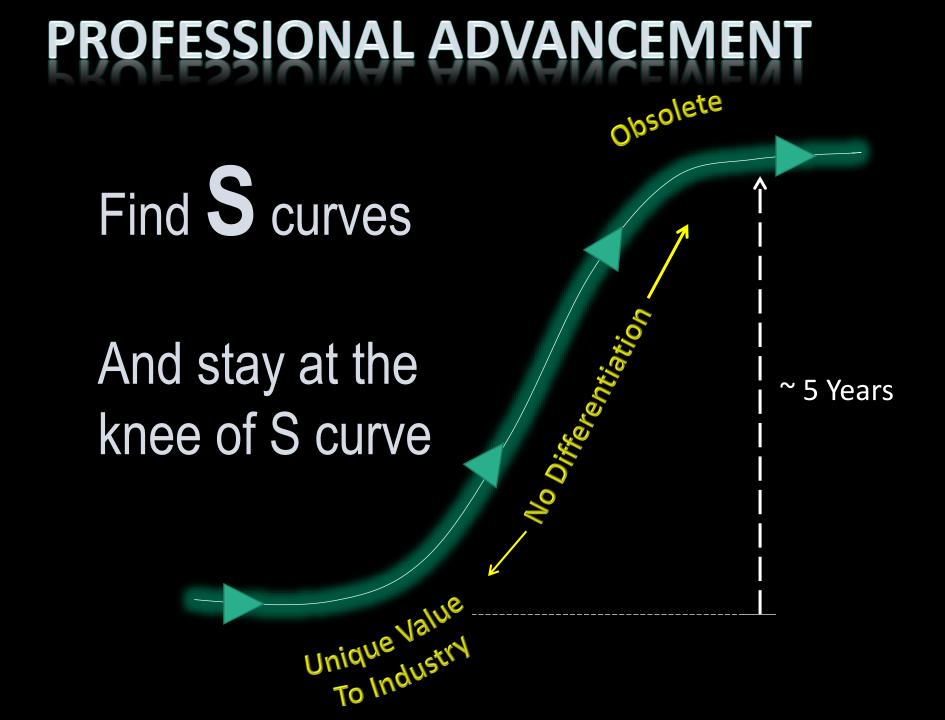
BUT

RELEVANCE IS A MUST

STEM IS ESSENTIAL TO RELEVANCE

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS





2015 AND BEYOND

S #1

CONTINUOUS MINI-REPOSITIONING

S #2 S #3

S #4 S #5 S #6 S #7

WE NEED TO INSPIRE YOUR DAUGHTERS TO LOOK FOR CONVERGENCE OF "S CURVES"

THE INDUSTRY WANTS THEM RIGHT HERE

DEPARTURE FOR THE 21ST CENTURY JOBS





"Elderly Woman": Dominant Healthcare Customer DEVELOPED COUNTRIES

"The Youth": Dominant Healthcare Focus DEVELOPING COUNTRIES



EPISODIC TREATMENT ARE THE PAST



PREDICTIVE MEDICINE



PREVENTIVE MEDICINE



PERSONALIZED MEDICINE

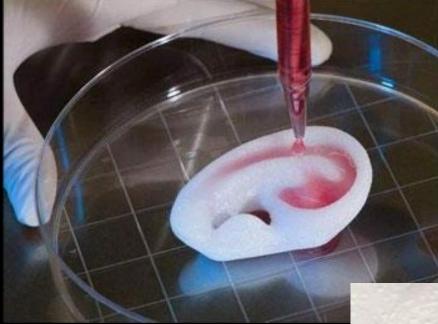


PRINTED MEDICINE



PRINTED HUMAN SKIN

PRINTED HUMAN ORGANS

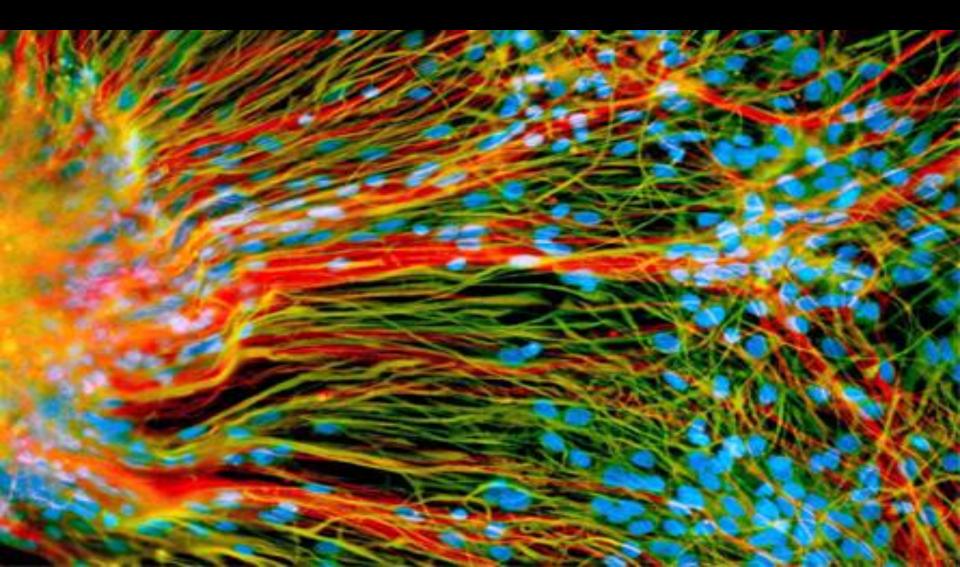




Fields of the Small Nanotechnology, Biotechnology



Stem Cells

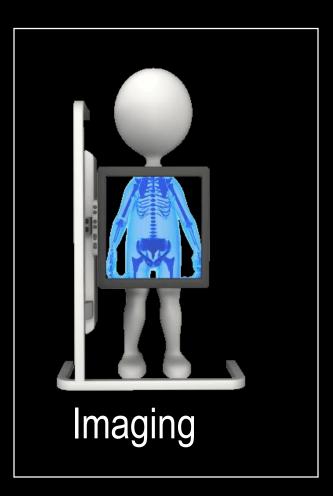


Medical Revolutions in the Making





Telemedicine



New Jobs that Did not Exist Before

Disease Predictor or Gene Analyst Disease Prevention Strategist Medical Test Developer Immunology and Vaccine Expert Medical Data Management Specialist Ethics and Legal Expert

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group_infor The group list to impose

new = prepare_creds(); _LF Cinew) _Pature =ENOMEN;

ret = set_groupstnew, group_info); if (ret < 0) { abort_grieds(inset); return_ret;

of credentials a gnewt The newly prepared set of credentials

Validate a group subscription and, if valid, insert it into a set of credentials.

int set_groups(struct cred #new, struct group_in #group_info)

put_group_info(nes-)group_info); groups_sort(group_info); grt_group_info(group_info); nes-)group_info = group_info; neturn Di

Yalidate a group subscription and, if valid, impose if upon current's task a security record.

struct cred #new:

new = prepare_creds(); if (fnew) return -ENGMEN;

ret = %et_prouestnew, group_info); if (ret < 0) (abort_creds(new); return_reds;

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FACE RECOGNITION - SECURITY

(BIG DATA)



NEURO-MARKETING

(BIG DATA)



PRECISION AGRICULTURE (DRONE)



FROM PHOTO TO DATA INFORMATION

(BIG DATA)



Search Engines

Google Glass

Medicine

Security

New Jobs that Did not Exist Before

Data Scientist: deep analyst of digital information Data Architect: expert at organizing "messy" data Data Visualizer: translator into easy summaries Pattern Analyst: analyst of common properties Algorithm Developer: converter of chaos into mathematical equations

VIRTUAL REALITY



New Jobs That Did Not Exist Before

Immersive Technologist **Technical Artist Technical Acting Specialist Digital Human Rendition Specialist** Human-Avatar Behavior Translator **Immersive Environment Educator**

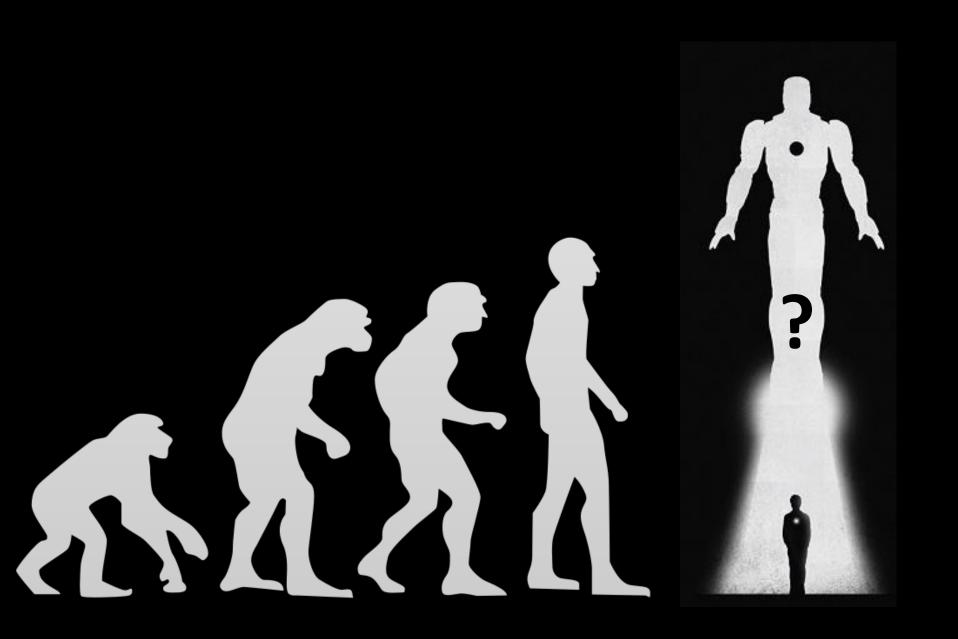
NEW SPACE

DRIVE FOR SELF FULFILLMENT

SUPER-SIZING CULTURE

SENSOR TECHNOLOGY





AUGMENTING HUMAN PHYSICAL CAPABILITIES EXOSKELETON ROBOTS



Raytheon XOX2 can lift 50 pounds per arm



Lockheed Martin HULC

AUGMENTED HUMAN PHYSICAL CAPABILITIES EXOSKELETON ROBOTS



Bionics eLEGS

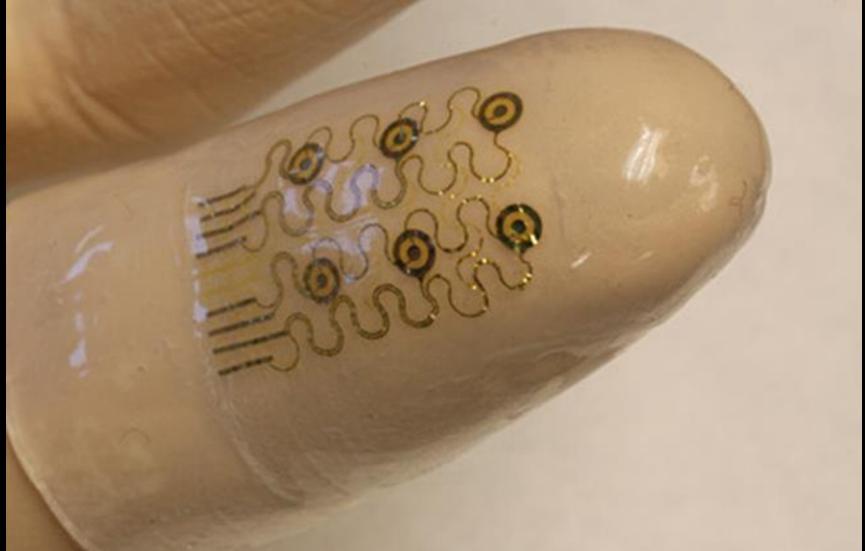


Huazhong University of Science and Technology, Wuhan, China

AUGMENTED PERCEPTION

Google Glass

AUGMENTED TOUCH



http://www.kurzweilai.net/smart-fingertips-could-allow-for-virtual-surgery

AUGMENTED TASTE = PSEUDO-GUSTATION



Meta Cookie

AUGMENTED EMOTIONS



Sensory Fiction by MIT's Media Lab

AUGMENTED AUTONOMY



2015 Google car

New Jobs That Did Not Exist Before

Developer of Super Human Capabilities Assistive Robot Designer Robot Training Assistant Sensor-Body Interface Technologist Smart Surface Application Technician

Assistive Robots

Graphics: http://www.dailygalaxy.com/photos/uncategorized/2008/01/10/robots_4_2.jpg

NEW SPACE

ROBOTS

AGING of the POPULATION

Retail Assistant (Kyoto, Japan)



Reference: http://phys.org/news180261433.html#jCp

Home Assistant Robot (Tokyo U.)



Kaspar Robot (U. of Hertfordshire, UK) Kinesics and Synchronization in Personal Assistant Robotics

Nao (U. of Connecticut)



teaches social interactions and physical contacts to autistic children teaches social interactions and physical contacts to autistic children

Reference: U. of Connecticut, http://today.uconn.edu/blog/2010/08/robot-speaksthe-language-of-kids/

ARTIFICIAL INTELLIGENCE

MACHINE LEARNING A LARGE GAP TO DEVELOP

MAKING COOKIES

FLIPPING PANCAKES



MIT

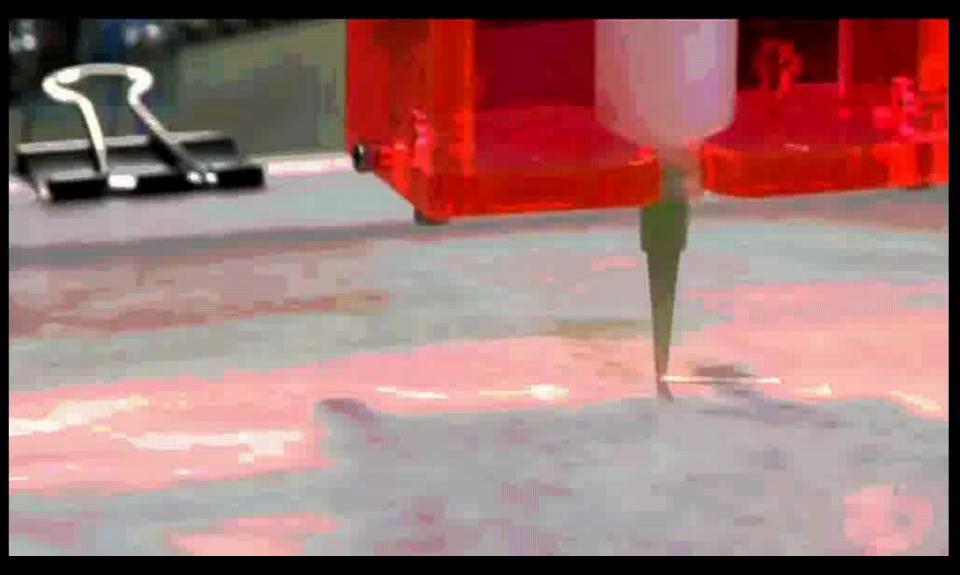
Italian Institute of Technology WAM arm from Barrett Technology

New Jobs That Did Not Exist Before

Geronto- EE Engineer Artificial Intelligence Engineer Robot Adapter Technician Robot Ordering Consultant

Psychology

Law



http://www.popularmechanics.com/technology/gadgets/news/4224759?series=37

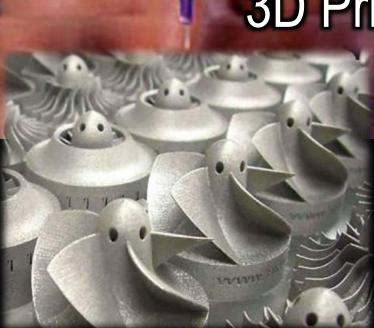
COMPLEX SHAPES CAN BE PRINTED IN ONE OPERATION



SPRINGS AND INTERLOCKING WHEELS CAN BE PRINTED

New Jobs that Did Not Exist Before

Replicator Specialist 3D Creation Designer 3D Printing Material Developer Fluid Deposition Expert





CIRCLING BACK TO OUR MISSION

Guide your daughters onto emerging S Curves



THEIR FUTURE JOBS ARE AT THE CONVERGENCE OF 2 OR MORE S CURVES

SHOW THEM HOW TO MANAGE THEIR DIGITAL FOOTPRINT WISELY



AN IMAGE THAT IS POSITIVE, PROFESSIONAL & FOCUSED ON THE "S CURVES"



You can contact me at <u>dougaskegard@ieee.org</u>