2018 Schedule: BIF at the Center

Scheduled days

- Feb 22
- March 8, 22
- April 5, 19
- May 3, 17, 31 (NOTE: alt. day to 5/3 is available)
- June 14, 28
- July 12, 26
- August 9, 23
- September 6, 20
- October 4, 18
- November 1, 15, 29
- December 13 (27 closed)

Subject List / Scheduled Speakers

SCHEDULED

- Feb 22 Cutting Edge Technology (MIT) - Mark H
- March 8 Underwater Colonization - Torben
- March 22 Microplastics and pollution - Pamela J
- April 5 Chaos Theory - Torben
- April 19

TO-BE-DECIDED

(5 before closing for Summer; 9 for the rest of 2018)

- Energy II
- Robots II
- Web productivity II - MultiSubject?
- Synthetic biology
- Voice editing - multi subject
- Self propelling liquid metal [1] - MultiSubject?
- 5 Most important ethical questions in science
- AI - Pro et Con
- Hacking
- Living With Robots - Sociology

- Future of Cities
- Circular Economy [2]
- Machine learning II [3] [4]
- Singularity

Five most important ethical questions of the next 20 years

1. Surveillance and privacy; right to know how our personal information is used
2. Will robots have rights
3. “Bill of Right-to-know” about how products are made
4. Right to an income (what if we are not working)
5. Freedom from Technology (the “human rights” to not being forced to use certain technologies)
6. Will humans with significantly extended life spans have special rights?

Five most important technologies of the near term future:

1. **Open AI-environment** - shared, open and free development platforms for AI which will explode the usability of machine intelligence at a much faster pace than with existing systems
2. **The Blockchain** - the public, open ledger that is used in Bitcoins (or similar systems) that will change the way markets and even governments work
3. **Microfluidity technology** - used in Lab-on-chips (LOC) technology that makes diagnostics fast and cheap
4. **Organs-on-chips technology** - that allows medical research to be conducted on miniature human organs before being used in humans
5. **Nanosensors** - capable of circulating in our bodies or be embedded in other objects (could be microrobots, proteins, or DNA pieces that store information and emit signals about their status (Internet of Things)
6. **Self-driving vehicles** - revolution of transportation
    - http://www.npr.stfi.re/sections/alltechconsidered/2016/06/29/471599187/a-24-year-old-designed-a-self-driving-minibus-maker-built-it-in-weeks
7. **New-generation batteries** (energy storage systems) that will allow devices to be powered by renewable sources, overcoming the obstacles to widespread all-time energy supply (from single devices to entire cities)
8. Overall Jaw dropping science breakthrough

Additional/related subjects

- **Nanosensors and the Internet of Nanothings** — With the Internet of Things expected to comprise 30 billion connected devices by 2020, one of the most exciting areas of focus today is now on nanosensors capable of circulating in the human body or being embedded in construction materials. They could use DNA and proteins to recognize specific chemical targets, store a few bits of information, and then report their status by changing color or emitting some other easily detectable signal.
- **Next-Generation Batteries** — One of the greatest obstacles holding renewable energy back is matching supply with demand, but recent advances in energy storage using sodium, aluminum, and zinc based batteries makes mini-grids feasible that can provide clean, reliable, around-the-clock energy sources to entire villages.
- **The Blockchain** — With venture investment related to the online currency Bitcoin exceeding $1 billion in 2015 alone, the

economic and social impact of blockchain's potential to fundamentally change the way markets and governments work is only now emerging.

- **2D Materials** — Plummeting production costs mean that 2D materials like graphene are emerging in a wide range of applications, from air and water filters to new generations of wearables and batteries.
- **Autonomous Vehicles** — The potential of self-driving vehicles for saving lives, cutting pollution, boosting economies, and improving quality of life for the elderly and other segments of society has led to rapid deployment of key technology forerunners along the way to full autonomy.
- **Organs-on-chips** — Miniature models of human organs could revolutionize medical research and drug discovery by allowing researchers to see biological mechanism behaviors in ways never before possible.
- **Perovskite Solar Cells** — This new photovoltaic material offers three improvements over the classic silicon solar cell: it is easier to make, can be used virtually anywhere and, to date, keeps on generating power more efficiently.
- **Open AI Ecosystem** — Shared advances in natural language processing and social awareness algorithms, coupled with an unprecedented availability of data, will soon allow smart digital assistants to help with a vast range of tasks, from keeping track of one's finances and health to advising on wardrobe choice.
- **Optogenetics** — Recent developments mean light can now be delivered deeper into brain tissue, something that could lead to better treatment for people with brain disorders.
- **Systems Metabolic Engineering** — Advances in synthetic biology, systems biology, and evolutionary engineering mean that the list of building block chemicals that can be manufactured better and more cheaply by using plants rather than fossil fuels is growing every year.

Ethical questions for the next 25 years

- Should people, corporations, or nations that are rich, be able to buy their way out of problems?
- What ethical rules should guide intervention of a person, corporation, or nation into the affairs of others?
- What are the ethics of aging and dying, particularly the ethics of euthanasia?
- What issues are involved in designing humans and other living organisms?
- Should machines have rights and what ethical issues are involved in the interactions between humans and technology?
- What new ethical issues will arise when society goes into space?
- What constitutes ethical or unethical behavior?
- Is it ethical for people, corporations, or nations to create future problems or uncertainties by current actions, even if well intended?
- Is it ethical to detain people or interfere with their lives on the basis of expectations about their future actions?
- What is the ethical trade-offs between human rights and the need for national security, particularly preservation of privacy and freedom from search?

Earlier input from the forum

Technologies:

- power - solar farms? fuel cells? eliminating the need for the current (no pun intended) power grid? transition to no power grid?
- bit coins - transition and world adoption?
- flying cars?
- medical/surgical changes - transition and effect on health care costs. Also who will be getting the new technology? only the rich? What will be considered "normal and reasonable"? [see Ethical thoughts above]
- What each individual needs to EAT to feel their best, to perform their best -- what they need to avoid. Food has got to be the biggest area we do not understand as it affects us individually, how it affects our physical, mental, emotional, maybe even spiritual, well being.

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1. http://www.cnet.com/news/self-propelling-liquid-metal-foreshadows-t-1000-from-terminator-2/ ↩
2. Circular Economy: http://films.economist.com/globalcompass ↩
3. Neuralink - Brain-Machine Interfaces https://futurism.com/videos/neuralink-could-help-humans-keep-up-with-ai/ ↩
4. Gary Kasparov: https://www.ted.com/talks/garry*kasparov*don*t*fear*intelligent*machines*work*with_them ↩