COVID-19
Weekly Summary
Vol. 2 April 16, 2020
MIT ILP UPDATES // COVID-19 RELATED
This is a very brief collection of current resources and information from MIT’s Industrial Liaison Program covering a range of issues related to COVID-19 and is offered to help us all navigate during this unprecedented and disruptive time.

MIT ILP UPDATES // COVID-19 RELATED
UPCOMING EVENTS
MIT ILP WEBINARS
THURSDAY, 23 APRIL, 10:00 AM ET: Navigating the Human Side of Transitions in Times of Change
THURSDAY, 23 APRIL, 4:30-5:30 PM ET: Rethinking National Security in the Age of Pandemics
THURSDAY, 30 APRIL, 10:00 AM ET: Using Digital Technology to Rapidly Recover from Operational Interruptions
MIT HACKING MEDICINE GRAND HACK: PARIS | 5-7 JUNE 2020

PROJECTS, INITIATIVES, RESEARCH
CHEMICAL ENGINEERING DEPARTMENT COVID-19 RESPONSE
Hadley Sikes, Associate Professor and Esther and Harold E. Edgerton Career Development Professor
Christopher Love, Associate Professor and Raymond A. (1921) and Helen E. St. Laurent Chair in Chemical Engineering
Robert Langer, David H. Koch Institute Professor

TREATMENT: PROPOSAL—IDENTIFICATION & TARGETING OF RNAs THAT ARE DIFFERENTIALLY EXPRESSED IN CHILD & ADULT NASAL EPITHELIUM FOR COVID-19 THERAPY
MEDICINE: A STOPGAP MEASURE TO TREAT RESPIRATORY DISTRESS
IDSS: ARE WE FLATTENING THE CURVE? A STATISTICAL PERSPECTIVE
MEDIA LAB: SAFE PATHS

White paper: Apps Gone Rogue: Maintaining Personal Privacy in an Epidemic

PACT: PRIVATE AUTOMATED CONTACT TRACING

PAPERS, ARTICLES, PRESENTATIONS, TALKS
DIAGNOSTICS: HOW COVID-19 TESTS WORK AND WHY THEY’RE IN SHORT SUPPLY (VIA MIT NEWS)
ECONOMY: THE IMPACT OF COVID-19 ON THE GLOBAL ECONOMY (PODCAST)
ECONOMY: HOW WILL COVID-19 CHANGE US? IS THERE ROOM FOR OPTIMISM? (PODCAST)
EPIDEMIOLOGY / MACHINE LEARNING: QUANTIFYING THE EFFECT OF QUARANTINE CONTROL IN COVID-19 INFECTIOUS SPREAD USING MACHINE LEARNING
MANAGEMENT: HOW TO MAKE BETTER DECISIONS ABOUT CORONAVIRUS (VIA MIT SLOAN MANAGEMENT REVIEW)
SUPPLY CHAINS: MIT CENTER FOR TRANSPORTATION & LOGISTICS (CTL) RESPONDS TO UNCERTAINTY IN SUPPLY CHAINS CAUSED BY THE CORONAVIRUS (COLLECTION OF ARTICLES)
SUPPLY CHAINS: SCENARIO PLANNING IN EMERGENCY RESPONSE (VIA MIT CTL)
SUPPLY CHAINS: FROM PANDEMIC DISRUPTION TO GLOBAL SUPPLY CHAIN RECOVERY (WEBINAR RECORDING)

MIT-RELATED STARTUPS
CEREBRI AI
E25BIO
EMPATICA
HUGINNTECH / HT EUROPE
UPCOMING EVENTS

MIT ILP WEBINARS
http://ilp.mit.edu/conference

20 April – Digital Transformation (1 of 4)
27 April – Digital Transformation (2 of 4)
14 May – Covid-19 & Crisis Management / Business Resilience
19 May – Digital Transformation (3 of 4)
22 May – Innovations in Management (1 of 3)
28 May – Digital Transformation (4 of 4)
28 May – Innovations in Management (2 of 3)
2 June – Future of Transportation
11 June – Innovations in Management (3 of 3)

THURSDAY, 23 APRIL, 10:00 AM ET: NAVIGATING THE HUMAN SIDE OF TRANSITIONS IN TIMES OF CHANGE

Presented by Hal Gregersen, Senior Lecturer
MIT Sloan Executive Education INNOVATION@WORK Webinar Series (free)
https://executive.mit.edu/webinars

THURSDAY, 23 APRIL, 4:30-5:30 PM ET: RETHINKING NATIONAL SECURITY IN THE AGE OF PANDEMS

Jim Walsh/Moderator, Prof. Vipin Narang et al

THURSDAY, 30 APRIL, 10:00 AM ET: USING DIGITAL TECHNOLOGY TO RAPIDLY RECOVER FROM OPERATIONAL INTERRUPTIONS

Presented by John Carrier, Senior Lecturer
MIT Sloan Executive Education INNOVATION@WORK Webinar Series (free)
https://executive.mit.edu/webinars

MIT HACKING MEDICINE GRAND HACK: PARIS | 5-7 JUNE 2020
https://grandhack.mit.edu/paris/
https://grandhack.mit.edu/sponsor/ -- sponsors

Participant and mentor applications for MIT Paris Grand Hack 2020 are now open.

#HackCOVID19
https://mithackingmedicine.brightidea.com/COVID19
As a virtual platform and community, we hope this site will become an evolving collection of PROBLEMS, leading to TEAMS self-assembling, and SHOWCASING SOLUTIONS that can be used by local teams on the ground. Initially many of these will focus on the CRITICAL NEEDS on the front lines of Hospitals, but many will start to highlight the new challenges and opportunities across medical specialties, places of care, communication needs, eldercare and contagion ideas, and service to those in need. We are starting without sponsors or prizes other than the mojo and Karma that goes with open sharing of ideas and solutions, but we are sure that other Sponsors will bring Prizes for specific challenges.

PROJECTS, INITIATIVES, RESEARCH

CHEMICAL ENGINEERING DEPARTMENT COVID-19 RESPONSE
https://cheme.mit.edu/covid-19-department-response/

Several labs in ChemE are directly addressing the current pandemic. Below is a list of research that our faculty are doing related to diagnostics and treatments for coronavirus and Covid-19. MIT ChemE provides an unparalleled skillset for approaching biomedical problems: almost a third of our faculty are working in areas related to human health. The following projects have been designated by the Institute as critical to the current crisis.

Hadley Sikes, Associate Professor and Esther and Harold E. Edgerton Career Development Professor
The Sikes Lab is developing tests for proteins in bodily fluids that indicate current or past Covid-19 disease. We are producing reagents for rapid serology tests (SARS-CoV-2 nucleo- and spike proteins to capture human IgG and IgM against SARS-CoV-2, engineered binding proteins that recognize these types of human antibodies.) We are also developing engineered binding proteins that recognize ARS-CoV-2 nucleo- and spike proteins in bodily fluids (nasal swabs, blood, saliva, lung fluids). We are working with clinicians in Singapore to validate the reagents with clinical samples and in parallel, industrial partners to integrate these reagents into test formats that can be produced at scale (bead-based, 96 and 384 well plate, and paper formats).

Christopher Love, Associate Professor and Raymond A. (1921) and Helen E. St. Laurent Chair in Chemical Engineering
We are working to accelerate the development and accessibility of biopharma-ceuticals and vaccines for patients globally through bioengineering. We recently developed end-to-end automated production of multiple biopharmaceuticals and potential vaccine components with clinical-grade quality in a benchtop system. Currently, we are advancing recombinant Covid-19 vaccine components intended for lowcost manufacturing and global access. A significant challenge for any vaccine will be the scalability of production to generate sufficient doses... The Love Lab is using an integrated approach combining biological insights for molecular and host cell design and new ways for integrated and continuous operations of production and purification to address this challenge directly. We are advancing a minimal vaccine concept as well as more advanced structures from the Covid-19 Spike protein with the intent of realizing scalable and low-cost manufacturing for global health. We are already connecting with developing country vaccine manufacturers and labs with appropriate animal models to test concepts and advance towards clinical studies anticipated as early as this summer.
Prof. Langer has several Covid-related projects:

- Collaboration with New Balance and Brigham and Women’s Hospital to advise on fabrication of N95-like masks for our healthcare workers.

- Developing an invisible, on-patient medical record to address the need for accurate medical record keeping in low resource settings (where no centralized database is available) and during disease outbreak/mass vaccination campaigns...

- First generation technology was recently developed with support from the Bill and Melinda Gates Foundation (BMGF) and published in Science Translational Medicine. We are currently adapting this technology for applications that could potentially help mitigate the current Covid-19 pandemic where accurate medical records are of the utmost importance and where the movement of people is highly linked to the spread of disease.

- Developing a single injection delivery system that can deliver multiple doses of an active agent in a single injection (e.g. Covid-19 vaccines that are currently being developed and/or being tested in clinical trials) that induce strong neutralizing antibody titers earlier than multiple bolus injections... allows for essentially any drug or vaccine to be incorporated and delivered via a single injection, yet can carry additional doses which stay in the body and release weeks or months later.

- The focus of this BARDA supported project is to develop a vaccine printer that allows for a rapid, point of care response by producing large numbers of stable vaccination patches for use during disease outbreaks or mass vaccination campaigns. Our approach is focused on the delivery of mRNA based-vaccines, including a Covid-19 mRNA formulation similar to the one currently in phase 1 clinical trial. Additionally, this platform can be expanded to deliver a variety of vaccine antigens and adjuvants...

- ...members of a research team from Moderna Therapeutics (founded by Langer, investor Noubar Afeyan PhD ’87, & researchers from Harvard Medical School), in collaboration with the National Institutes of Health, finalized the design of a vaccine they hope will prevent infection from the disease. The company develops treatments that leverage specialized transporter molecules in cells known as messenger RNAs... By creating specially modified mRNA, Moderna believes it can develop therapies to treat and prevent a number of diseases in humans. Following its design of a potential Covid-19 vaccine, the company quickly moved to manufacture the mRNA vaccine for clinical trials. On March 16, just 65 days after Covid-19 was sequenced, Moderna began human trials, according to the company. The first stage of the trials is expected to last 6 weeks and will focus on the safety of the vaccine as well as the immune response it provokes in participants. The company has said that while a commercially available vaccine is not likely to be available for at least 12-18 months, it is possible that under emergency use, a vaccine could be available to some people sooner.
TREATMENT: PROPOSAL—IDENTIFICATION & TARGETING OF RNAs THAT ARE DIFFERENTIALLY EXPRESSED IN CHILD & ADULT NASAL EPITHELIUM FOR COVID-19 THERAPY

Team leads: Jill R. Crittenden, Ph.D., Lael M. Yonker, M.D., Stuart S. Levine, Ph.D., Bradley L. Pentelute, Ph.D.

The proposed experiments are aimed at discovering and targeting RNAs that we hypothesize to render nasal cells vulnerable to SARS-Co-V1 and SARS-Co-V2 infection in adults, but not children. Our team consists of a physician who is collecting nasal swabs from children and adults and preparing RNA for COVID-19 testing (Lael Yonkers). MIT scientists with expertise in RNA sequencing (Jill Crittenden & Stuart Levine) will direct the remainder of each RNA sample for sequencing by technicians who are now approved to work on campus – we will first focus on COVID-19 negative samples since these target cells are lost in at least some disease cases. We will work with the MIT Bioinformatics group to identify RNAs present in the nasal epithelium cell atlas, and that are differentially expressed in children vs. adults. All findings will be shared with team-member Brad Pentelute (MIT), for the development of antisense oligonucleotides (ASOs), and peptides that target selected candidate genes.

Ultimately, such therapies could be directly applied to the nasal cavity to block SARS-Co-V2’s ability to enter these cells. Multiple coronavirus subtypes, including SARS-Co-V1 and MERS, share cell-entry mechanisms. Direct blockade of viral entry to nasal epithelial cells may provide a rapidly deployable line of defense for COVID-19 and new pathogenic coronaviruses.

MEDICINE: A STOPGAP MEASURE TO TREAT RESPIRATORY DISTRESS

Repurposing a drug used for blood clots may help Covid-19 patients in danger of respiratory failure, researchers suggest.


Related paper: Tissue Plasminogen Activator (tPA) Treatment for COVID-19 Associated Acute Respiratory Distress Syndrome (ARDS): A Case Series

Researchers at MIT and the University of Colorado at Denver have proposed a stopgap measure that they believe could help Covid-19 patients who are in acute respiratory distress. By repurposing a drug that is now used to treat blood clots, they believe they could help people in cases where a ventilator is not helping, or if a ventilator is not available...

Three hospitals in Massachusetts and Colorado are developing plans to test this approach in severely ill Covid-19 patients. The drug, a protein called tissue plasminogen activator (tPA), is commonly given to heart attack and stroke victims. The approach is based on emerging data from China and Italy that Covid-19 patients have a profound disorder of blood clotting that is contributing to their respiratory failure.
“If this were to work, which I hope it will, it could potentially be scaled up very quickly, because every hospital already has it in their pharmacy,” says **Michael Yaffe, a David H. Koch Professor of Science at MIT**. “We don’t have to make a new drug, and we don’t have to do the same kind of testing that you would have to do with a new agent. This is a drug that we already use. We’re just trying to repurpose it.

**IDSS: ARE WE FLATTENING THE CURVE? A STATISTICAL PERSPECTIVE**

_Hamsa Balakrishnan, Yash Deshpande, David Gamarnik, Peko Hosoi_

[https://idss.mit.edu/vignette/are-we-flattening-the-curve-a-statistical-perspective/](https://idss.mit.edu/vignette/are-we-flattening-the-curve-a-statistical-perspective/)

The spreading rate of Covid-19 is infamously exponential at the early stages of the epidemic, translating to doubling every 2.3 days in US (although varying region by region). However, classic epidemiology models suggest that the rate of growth itself depends on the number of incidences, and the rate declines as the number of incidences grow. With 90-95% of the US population under strict social distancing measures, have we flattened the curve? Do we see a decline in the exponential rate?

We develop a _simple model_ to test which states in the US still see an exponential rate of growth, and for which ones we observe a decline. The model postulates the dependence of the form \( n(t+1) = n(t)\exp(A-Bn(t)) \), where \( n(t) \) is the number of confirmed cases in the region up to date. Exponential growth (status quo or null hypothesis) corresponds to setting \( B=0 \). A flattening, or decline of exponential growth (the alternative hypothesis) corresponds to \( B \) being positive.

Using data made available by the New York Times, we estimated parameters _A_ and _B_ from the number of confirmed cases in 50 states and the District of Columbia. Our results show that while 35 regions demonstrate a clear decline in the exponential growth (\( B>0 \) with 99% confidence), the remaining 16 regions show numbers consistent with exponential growth. Similar computations for several states in India, including Maharashtra, Tamil Nadu and the national capital territory of Delhi, as well as India nationally, reveal that the states as well as the country are still on the exponential growth of incidences.

The graphs show the growth rate, in fractional terms, at which the disease is spreading state-wise. Plots are on a semi-log scale; exponential growth corresponds to a constant value (see e.g. Nebraska or South Dakota). Black dotted lines indicate \( 1/7 \) days, i.e. the rate at which the number of reported cases doubles in a week. Blue curves indicate states in which the growth rate is sub-exponential as determined by the hypothesis testing method described above; red curves indicate states that are not sub-exponential. Time = 0 was chosen as the first day in which more than 20 cases were reported. Data was smoothed with a Savitzky-Golay filter before calculating the spreading rates.

**MEDIA LAB: SAFE PATHS**

_Prof. Ramesh Raskar (lead PI)_


_updates:_ [https://www.media.mit.edu/projects/safepaths/updates/](https://www.media.mit.edu/projects/safepaths/updates/)


Safe Paths is an _MIT-led, free, open source technology_ that enables jurisdictions and individuals to maximize privacy, while also maximizing the effectiveness of contact tracing in
the case of a positive diagnosis. The Safe Paths platform, currently in beta, comprises both a smartphone application, PrivateKit, and a web application, Safe Places. The PrivateKit app will enable users to match the personal diary of location data on their smartphones with anonymized, redacted, and blurred location history of infected patients. The digital contact tracing uses overlapped GPS and Bluetooth trails that allow an individual to check if they have crossed paths with someone who was later diagnosed positive for the virus. Through Safe Places, public health officials are equipped to redact location trails of diagnosed carriers and thus broadcast location information with privacy protection for both diagnosed patients and for local businesses.

White paper: Apps Gone Rogue: Maintaining Personal Privacy in an Epidemic

PACT: PRIVATE AUTOMATED CONTACT TRACING
Leads: Professor Ron Rivest & Principal Research Scientist Daniel Weitzner, Marc Zissman (Associate Head of the Cyber Security and Information Sciences Division, MIT Lincoln Laboratory); and Louise Ivers, MD, MPH, DTM&H (Executive Director, MGH Center for Global Health, Associate Professor of Global Health & Social Medicine, Associate Professor of Medicine, Harvard Medical School)
https://pact.mit.edu/

The PACT team has come together with rapid engagement from faculty and research staff all over MIT and Lincoln Laboratory, and from collaborators at Massachusetts General Hospital, Boston University, Carnegie Mellon University, Weizmann Institute of Science, SRI and Brown University, plus a number of individual contributors.

Our team at MIT, working with partners from around the world, has developed a system for identifying people at risk of infecting COVID-19, by using the Bluetooth signals that our cell phones send each other. Privacy is a bedrock value so our system can notify individuals of potential contacts without revealing any private information to other individuals, the government, health care providers, or cell service providers.

... Therefore, MIT is leading effort with partners around the world to develop an open, interoperable, privacy-preserving protocol which we call PACT, Private Automatic Contact Tracing. PACT is a technical standard/specification that anyone can deploy on any smartphone. Users that are part of the PACT will have the confidence to know that they are getting accurate information, that they are contributing to their community's effort to limit the spread of COVID-19, and that their privacy is protected in the process.
PAPERS, ARTICLES, PRESENTATIONS, AND TALKS

DIAGNOSTICS: HOW COVID-19 TESTS WORK AND WHY THEY’RE IN SHORT SUPPLY (VIA MIT NEWS)

MIT scientists Omar Abudayyeh and Jonathan Gootenberg explain the current state of Covid-19 testing, and how a CRISPR tool may help solve the supply problem.


One key to stopping the spread of Covid-19 is knowing who has it. A delay in reliable tests and Covid-19 diagnostics in the United States has painted an unreliable picture of just how many people are infected and how the epidemic is evolving. But new testing options are now becoming available and the information from these diagnostics will help guide decisions and actions important for public health.

McGovern Institute research scientists Omar Abudayyeh and Jonathan Gootenberg have been developing CRISPR technologies to rapidly diagnose Covid-19 and other infectious diseases. They recently described the current state of Covid-19 testing.

ECONOMY: THE IMPACT OF COVID-19 ON THE GLOBAL ECONOMY (PODCAST)

7 April 2020, via MIT Initiative on the Digital Economy


What will the post-coronavirus world look like? What changes will persist? These are among the most pressing questions to consider once we emerge from the health crisis itself. Ruane, who also teaches entrepreneurship at Trinity College in Dublin, spoke about the impact of COVID-19 on the global economy now and the potential opportunities and changes likely to arise when business reopen in a podcast on Ireland’s TodayFM.

He acknowledged that most of the previous theories about the future of work are getting blown up since we are “no longer in a steady state. During irregular operations, standard ways are no longer relevant.” Global supply chains need to be re-evaluated, along with re-shoring, public health, trade, and investment decisions, he said.

ECONOMY: HOW WILL COVID-19 CHANGE US? IS THERE ROOM FOR OPTIMISM? (PODCAST)

6 April 2020, via MIT Initiative on the Digital Economy

Andrew McAfee, IDE Co-director and Principal Research Scientist at the MIT Sloan School of Management


https://peakoil.com/consumption/how-will-this-change-us-is-there-room-for-optimism
In this wide-ranging April 6 podcast, IDE co-director, Andrew McAfee, talks with PeakOil reporters about the impact coronavirus is having, and the responsibilities of the private and the public sectors to step up and step in.

**EPIDEMIOLOGY / MACHINE LEARNING: QUANTIFYING THE EFFECT OF QUARANTINE CONTROL IN COVID-19 INFECTIOUS SPREAD USING MACHINE LEARNING**

Raj Dandekar, George Barbastathis (Prof. of Mechanical Engineering), Posted April 6, 2020, medRxiv, doi: https://doi.org/10.1101/2020.04.03.20052084

This article is a preprint and has not been peer-reviewed. It reports new medical research that has yet to be evaluated and so should not be used to guide clinical practice.

Since the first recording of what we now call Covid-19 infection in Wuhan, Hubei province, China on Dec 31, 2019, the disease has spread worldwide and met with a wide variety of social distancing and quarantine policies. The effectiveness of these responses is notoriously difficult to quantify as individuals travel, violate policies deliberately or inadvertently, and infect others without themselves being detected. Moreover, the publicly available data on infection rates are themselves unreliable due to limited testing and even possibly under-reporting. In this paper, we attempt to interpret and extrapolate from publicly available data using a mixed first-principles epidemiological equations and data-driven neural network model. Leveraging our neural network augmented model, we focus our analysis on four locales: Wuhan, Italy, South Korea and the United States of America, and compare the role played by the quarantine and isolation measures in each of these countries in controlling the effective reproduction number \( R_t \) of the virus. Our results unequivocally indicate that the countries in which rapid government interventions and strict public health measures for quarantine and isolation were implemented were successful in halting the spread of infection and prevent it from exploding exponentially. In the case of Wuhan especially, where the available data were earliest available, we have been able to test the predicting ability of our model by training it from data in the January 24 till March 3 window, and then matching the predictions up to April 1. Even for Italy and South Korea, we have a buffer window of one week (25 March - 1 April) to validate the predictions of our model. In the case of the US, our model captures well the current infected curve growth and predicts a halting of infection spread by 20 April 2020. We further demonstrate that relaxing or reversing quarantine measures right now will lead to an exponential explosion in the infected case count, thus nullifying the role played by all measures implemented in the US since mid March 2020.

**MANAGEMENT: HOW TO MAKE BETTER DECISIONS ABOUT CORONAVIRUS (VIA MIT SLOAN MANAGEMENT REVIEW)**

Thomas H. Davenport, Fellow, at MIT Initiative on the Digital Economy (IDE) and President’s Distinguished Professor of Information Technology and Management at Babson College; senior adviser to Deloitte’s Analytics & Cognitive practice

Decision-making becomes most important in times of crisis, and this certainly is one of those times. But it also becomes more challenging, too, during periods of stress and most difficult when future outcomes are uncertain — which describes the current period as well. One reason is because cognitive decision biases are likely to appear in highly changeable, high-stress environments, influencing decisions in damaging ways.
The field of behavioral economics, led by social psychologists Daniel Kahneman and Amos Tversky, has identified a number of cognitive biases that affect decision-making — usually in a negative way. There is no definitive list of such biases, but Wikipedia lists 124 decision-oriented biases. It’s sobering to note all the ways in which human brains distort decision processes; perhaps it’s a wonder that any good decision is ever made.

I’ve been thinking of all the decision biases that have come into play with regard to COVID-19. Among some of our (U.S.) political leaders, and the citizens of this country as well, decision biases of multiple types seem to be in evidence. Perhaps seeing these pointed out will improve decision processes for all of us — including politicians who make large-scale decisions affecting millions, business leaders who make decisions affecting their organizations and many stakeholders, and those who make decisions for themselves and their families.

Common Biases Framing Our COVID-19 Thinking

Emotion-driven beliefs and intuition are powerful at guiding people toward less-than-optimal decisions. By understanding our biases, we have a better chance of quieting them and moving toward better choices.

I have listed the biases that I think are most related to the decisions we need to make around COVID-19 in the rough order of their commonality and importance. (There are so many that if I used alphabetical order, you might never find the important ones)

- Status quo bias
- Political bias
- Confirmation bias
- Availability heuristic
- Framing effect
- Bandwagon effect
- Hostile attribution bias
- Neglect of probability
- Normalcy bias

See link for full description of each

MORE FREE ARTICLES AT MIT SLOAN MANAGEMENT REVIEW (SMR):
https://sloanreview.mit.edu/tag/covid-19/

SUPPLY CHAINS: MIT CENTER FOR TRANSPORTATION & LOGISTICS (CTL) RESPONDS TO UNCERTAINTY IN SUPPLY CHAINS CAUSED BY THE CORONAVIRUS (COLLECTION OF ARTICLES)


Given recent supply chain implications of the coronavirus outbreak, MIT CTL researchers have responded with observations and advice for companies.
SUPPLY CHAINS: SCENARIO PLANNING IN EMERGENCY RESPONSE (VIA MIT CTL)

James Rice, Deputy Director, Center for Transportation & Logistics and Director, Supply Chain Exchange Program, Deputy Director, Center for Transportation & Logistics Director, Supply Chain Exchange Program
OR: https://medium.com/mitsupplychain/covid-19-will-we-learn-the-lessons-or-make-the-same-mistakes-ef8860aa677c

This scenario was created in 2006 by the MIT Center for Transportation & Logistics as part of a simulation exercise that involved executives from a real-life company who took on the roles of Vaxxon’s fictitious emergency response team.

It is based on an actual outbreak of Asian bird flu virus, that at the time was as terrifying as COVID-19 is today. We revisited the 2006 simulation — which was used as a powerful teaching aid — to underline that while crises of this type are by no means new, companies often fail to heed the lessons they provide. MIT CTL research indicates that some enterprises do adopt meaningful practices in the aftermath of a large-scale disruption — but most don’t take the opportunity to build supply chain resilience.

SUPPLY CHAINS: FROM PANDEMIC DISRUPTION TO GLOBAL SUPPLY CHAIN RECOVERY (WEBINAR RECORDING)

7 April 2020: https://www.youtube.com/watch?v=XfOSoa5X62w&list=PLKaF-rnKfpXODFnQsd8UVCeBYP5w3ZGS&index=3&t=0s

David Simchi-Levi, Professor of Engineering Systems and Director of the MIT Data Science Lab, discusses the impact the rapid spread of the Covid-19 virus is having on the global economy, which is rippling around the world via the long supply chains of major industries. Supply chain executives need to quickly respond to this challenge.

MIT-RELATED STARTUPS

https://startupexchange.mit.edu/

CEREBRI AI

https://www.cerebriai.com/, Austin TX; Washington DC; Toronto, Ontario CANADA

Applying their AI analytics well tested on customer journey to patient journey

We have invested $20M into an automated AI pipeline from data ingestion to insights delivered via API or UX. In the middle is our proprietary reinforcement learning based AI that has so far been used to measure and derive insights from customer journeys. We are applying this to patient journeys now, starting with COVID-19 for both patient and doctor reported symptoms and outcomes. Our solution has already been chosen to be back-end for a leading PRO company doing a COVID-19 deal for two major pharma companies. We would like to work with corporates who have similar needs.
**Proof Points:** We have shown the ability to measure customers and predict outcomes based on structured data. We have proven that on average 75% of the predictive power comes from interactions or events rather than demographics. We have done this for several customer use cases such as retention/churn, upsell, lending, and economic forecasting. We work with the F500 companies so have enterprise grade solutions.

**Additional Information:** We have staff in Austin, Washington, and Toronto that can work on these solutions (remotely for now) and have a relationship with MSFT Azure to get Azure credits for initial phases of deployment.

---

**E25BIO**

https://www.engine.xyz/founders/e25bio/
https://e25bio.com/ Cambridge MA

Rapid diagnostic tests for infectious diseases including Covid-19; just raised $2M for this, https://e25bio.com/press/


---

**EMPATICA**

https://www.empatica.com/ Boston, MA

We build clinically validated wearable devices that utilize our machine learning algorithms to passively monitor physiology and digital endpoints. With our FDA and CE marked products, we’re leveraging a year-long initiative funded by DARPA / BARDA building an early detection and monitoring platform for respiratory infections.

**Proof Points:** We’re leveraging three former studies where we monitored individuals at risk for influenza or rhinovirus infection. Early wearable data shows promising results towards detecting and alerting to the first days of infection, before symptoms present. We’re building a platform to help individuals self-quarantine and get care faster, secondarily helping prevent further spread.

**Additional Information:** The goal is to validate and scale this detection and alerting system, reducing the burden on clinics/hospitals, while also taking care of our frontline defense, healthcare workers. We’re looking for partners to help us quickly scale our platform and study, and secure: 1. Clinical sites for monitoring at risk healthcare workers, and 2. SpO2 monitoring devices.

---

**HUGINNTECH / HT EUROPE**

https://www.linkedin.com/in/monteroluque/?originalSubdomain=es
https://huginntech.com/ Spain

**HAWI is a mobile-first service** that enables families to protect and support the independence and health of older adults who live alone, or who are in isolated environments, at home, in a nursing home, or elsewhere.
They do so by coordinating help among family members with the older adult's day to day activities and in coordination with the health system to collect data and run tests at the home that monitor chronic conditions and measurements of independence. Deviations from typical results create alerts and foster communication with primary and geriatric care for preventive and early action with the health providers. hawi also provides psychological and self-care advice for the older adult and the family to ensure better communications and an enhanced level of care. hawi runs on personal phones and tablets and requires no additional devices but can integrate with them to automate or enhance data collection.

Proof Points: We are building the solution in collaboration with the Getafe University Hospital, part of the Madrid Health Service, and will pilot it there as well as in the Medical University of Lodz, Poland, and in the Tomelilla Municipality in Sweden. We will be doing this as part of a European consortium currently formed for a project for the EIT Health organization of the European Union. We are also working with the health system in the Castilla y León region of Spain for trial deployment in rural areas. This region is the largest geographical region in the European Union with a substantial older rural population.

Additional Information: Huginntech is the US office of HT Europe, a Spanish company with founders from the US and Spain. Our company has been founded by IT, medical, and psychology partners who bring extensive experience in developing solutions for high reliability environments and in the treatment of older populations.