



virtuAIChE®

This month's meeting:

*Primary (with live discussion/live chat) Wednesday, Jul 28 at 9 pm ET (US) / 1 am GMT
Alternate 1 (with live discussion/live chat) Thursday, Jul 29 at 7 am ET (US) / 11 am GMT
Alternate 2 (with live discussion/live chat) Thursday, Jul 29 at 1 pm ET (US) / 5 pm GMT*

Automation of process simulation and data analytics with MATLAB

Presented by Samvith Rao,
global chemical and petroleum manager at MathWorks.

When undertaking the upfront design or studying routes to optimization of a production plant, the workflow typically requires manual transfer of data between different process simulators (Eg. Aspen Plus, HYSYS) and other process modeling environments (PMEs). This procedure is inefficient, due to the time and resources required to manually transfer the necessary data. It also introduces risk of transcription error, which can lead to inconsistencies in modeling and drives up the total cost of modeling. In this talk, we will show how you can solve these issues by integrating MATLAB with process simulators. You can use this workflow for automation of simulator operations and advanced analytics. Highlights include:

- Integrating with process simulators for custom unit operations and advanced process control (APC)
- Using MATLAB with Aspen Plus and HYSYS for design optimization
- Using the CAPE-OPEN interface to embed a MATLAB model into a PME



Samvith Rao is the global chemical and petroleum manager at MathWorks. He leads the engagement and drives the technical awareness of MathWorks products in these industries. Prior to his current role, he worked as a process engineer at Reliance Industries Limited. He handled technical services, long term projects and modeling & simulation for the reforming units. Samvith earned B.Tech and M.Tech degrees in Chemical Engineering from IIT Madras, and an MBA from UNC - Chapel Hill. He is a senior member of the AIChE.

***Note that registration for VLS meetings is required.
Our meetings are still free to attend and open to all.***

July Meeting Registration Information

| Primary | Alternate 1 | Alternate 2 |
|---|---|---|
| (Live Presentation/Live Chat) | (Recorded Presentation/Live Chat) | (Recorded Presentation/Live Chat) |
| July 28 at 9 PM EST / 1 AM GMT | July 29 at 7 AM EST / 10 AM GMT | July 29 at 1 PM EST / 5 PM GMT |
| Register in advance for the Primary Meeting | Register in advance for the Alternate 1 Meeting | Register in advance for the Alternate 2 Meeting |

After registering, you will receive a confirmation email containing instructions for joining the meeting, along with add-to-calendar links.

Emotional Intelligence and Soft Skills In the Workplace and In the Future World of Work

by Dr. Lucia Feng, President & CEO
OnCareerSuccess Inc.

Let's be honest. When you first heard of or read the term "emotional intelligence" skill in articles, job description or in performance review, did you chuckle, roll your eyes or think this soft skill is human resource (HR) professionals exerting a touchy-feely metric on you/employees?

Laugh no more. Today emotional intelligence is considered one of the foundational skills that will put you in demand and help propel your career if you have it. If you don't have it, your chances of career success may be limited.

Bryan Hancock, a McKinsey talent expert, stated that "soft skills are going to be as or more important in a shifting world than specific technical skills you pick up from a 12-week boot camp." [1]

What Are Soft Skills?

Hard skills are technical skills – such as Science Technology Engineering Mathematics (STEM) skills – that are specific to each individual profession, and which can be proven and measured. Examples of hard skills are developing computer algorithms, doing a mass balance on the unit operations of a chemical plant, and bookkeeping.

In contrast, soft skills are non-technical skills that are intangible and hard to quantify. Soft skills are interpersonal skills, traits or attributes that enable an individual to interact with others to building relationships, improving work productivity, and contributing to career success and job satisfaction. Examples of soft skills include critical thinking, verbal and written communications, leadership, emotional intelligence, collaboration, conflict resolution and adaptability. Adaptability as a soft skill was discussed in the March and April 2021 Monthly Newsletters of the Virtual Local Section of AIChE.

Emotional Intelligence, in the context of this discussion, encompasses five critical skills: self-awareness, self-regulation, motivation, empathy and social skills [2].

Why Are Soft Skills Emerging As Skills Workers Will Need In the Future of Work?

Digital transformation of the workplace and artificial intelligence (AI) technologies have been steadily taking place in the past five years. As a world-changing event, the COVID-19 pandemic has accelerated the implementation of these technology transformations.

For example, 68% of respondents in a recent automation/control engineering industry survey released in May 2021 reported COVID-19 accelerated applications of remote connectivity, 39% for digitization, 32% for cybersecurity, and 19% for use of automation and controls. For the four application areas, survey respondents indicated the boost to accelerate implementation for greater than one year was 51%, and for the timeframe 6 months to one year was 39% [3].

Cybersecurity is another example that perfectly illustrates how business conditions can substantially change rapidly due to previously unknown risks or unforeseen development but impose the urgent and critical need of new skills in the current and future world of work. Two years ago, the term ransomware was not a common vocabulary. As a result of cybersecurity breaches with ransomware at Colonial Pipeline Corporation in May 2021 that literally resulted in no gasoline available to sell to residents of many states on the East Coast and in the southern U.S., and at JBS Meat Producer company in June 2021 that reduced meat production for U.S. residents, cybersecurity is now one of the highest priorities and focus areas for companies and government across national, state and local levels because of the national security risks these ransomware attacks pose. More specifically for all corporations, cybersecurity and the threat to a company's operations and brand now command attention and actions at the CEO and senior executive level all the way down to the first level of IT support staff, product development engineers, customer support, accounts payable and production teams throughout corporate America. Essentially each employee in their respective work post became a "risk manager" as they need to use varying degrees of digital literacy – such as knowing not to click on a link in a phishing email or apply specialized knowledge to develop layered defense in products under development or operations against unauthorized data access – to fight against cybersecurity breaches.

These afore mentioned examples, and the COVID-19 pandemic, illustrate the continued and urgent necessity businesses and their employees confront to adopt new technologies and new skills by today's workforce in order to adapt to uncertainties, changing business conditions, and new ways to working. What is known is that some jobs will be lost, and new jobs will be created as AI, digital transformation, automations, and other innovations are implemented and take hold. Research by the McKinsey Global Institute has found "the need for manual and physical skills, as well as basic cognitive ones, will decline, but demand for technological, social and emotional, and higher cognitive skills will grow." [4].

While acknowledging some work will require specialized skills, McKinsey conducted research on what foundational skills citizens/workers in a labor market that is dynamic, more automated, and more digital will need to have regardless of what industry they will work in or their occupations. Specifically, these skills have to meet three criteria McKinsey set up for this research:

1. Add value beyond what automated systems and intelligent machines can do
2. Operate in a digital world
3. Adapt continuously to new ways of working and new occupations

McKinsey started the research using four broad categories of skills: cognitive, digital, interpersonal, and self-leadership. Another 13 separate skill groups were further identified for these four broad

categories. For example, critical thinking, communication, and mental flexibility are three skill groups that are classified under the “cognitive” category. Adaptability, which McKinsey defines as “the ability to be open to changing the way of doing things even if it requires effort or learning new skills” [3], is an element further classified under the skill group of mental flexibility. Adaptability is conventionally defined as a “soft skill”.

As one of the four broad categories of skills, “self-leadership” encompasses three separate skill groups – namely, self-awareness and self-management, goals achievement, and entrepreneurship. Both self-awareness and self-management and goals achievement are elements which are conventionally referred to as emotional intelligence skills.

The “interpersonal” broad category of skills is comprised of the skill groups of teamwork effectiveness, developing relationships, and mobilizing systems by McKinsey’s definition. Under the skill group of “developing relationships”, the element of socialability – commonly known as ‘social skills’ - is conventionally referred to as an emotional intelligence skill. Similarly, the element of empathy – which is the ability to understand how another feels and experiences the world [4], is also conventionally referred to as an emotional intelligence skill.

Answers to the question why soft skills are needed for the future of work can be inferred from McKinsey’s survey research findings. In essence, workers with skills that intelligent machines and automated systems cannot have – such as broad human-based skill groups of interpersonal, cognitive and self-leadership skills – are “future-proof”, meaning their skills are likely to make them in demand and “recession proof” in the future world of work. Consider these scenarios: no matter how fast a transaction is processed, or how few people is needed to do a complex task, it is the human - and therefore the “soft skills” the human has - working with other humans who programs or automates the machines, works with other employees or customers in listening and empathizing to troubleshoot or learn their needs to develop product solutions, or works with other humans across different functional groups and across geographical locations to develop the intelligent machines or to dynamically adapt to an unplanned pandemic, etc. Individuals having as many of the foundational skills – many of which are emotional intelligence and other soft skills – that the future world of work will need are likely to have better successes of positive outcome in employment, income and job satisfaction, especially if they acquire knowledge and develop proficiencies in the broad category of digital skills.

Summary and What Do You Need to Do To Future-Proof Your Future

With knowledge of the importance of soft skills, workers need to prioritize in their personal and professional development to acquire soft skills (and specific digital hard skills if relevant) that they don’t have. Governments, companies and educational entities such as secondary schools, community colleges and universities need to define, establish and training or academic curricula, respectively, to ensure workers have the right soft skills to do what the future of work requires. If you are in leadership roles, work with senior management to develop scalable educational training in the curricula with local educational entities to ensure graduates are exposed to, and ideally trained, with the common foundational soft skills.

Individuals/employees need to recognize, accept, and commit to the importance – and own the responsibility as part of their own career management – to acquire soft skills to ensure their ability to maintain and grow in jobs for career success. Lifelong learning and the continuous learning of new (soft and hard) skills required to do whatever the new situations or new ways of working needs to be integrated into one’s professional growth goals. If not, individuals may gradually find themselves

uncompetitive because they do not have the important skills that job opportunities in the future of work require.

In the formal and informal performance review meetings with their management, individuals should communicate their plan that continuous learning of new skills is one of their professional development growth objectives on the performance goals. Budget pressures have eliminated professional development training for many workers as well because registration costs for an outside training course can easily cost a company \$200-\$700 per person. Regrettably, many companies and managers can also be reluctant to permit their employees take time off from work to attend training offsite to learn skills that can help the company's revenues and productivity in the long run. If you are in leadership role, recognize that investing in your employee's professional skills will enable you and your business unit to thrive while improving employee retention and aiding recruitment of new talents; therefore, make budget allocations and time for employee development.

OnCareerSuccess offers [professional development learning](#) using cloud-based technology to ensure universal, on-demand access to affordable high-quality expert-developed learning on diverse topics such as "Applying Emotional Intelligence In The Workplace", "Emotional Intelligence: Critical Competencies For Leaders", "Managing Conflict In The Workplace", "Managing Team Conflict", "Adapting To Change At Work", and "10 Tips For Managing Your Remote Employees".

The webinar "Applying Emotional Intelligence In The Workplace" is available for complimentary on-demand access for AIChE members. Here is the link:

- Go to the [Events | OnCareerSuccess](#) page.
- Click on the "View Archived Recording On-Demand" button for the event "Applying Emotional Intelligence In The Workplace".
- Enter the case sensitive password "NorCalAIChE2021" when you are directed to the password-protected page at link:
[Applying Emotional Intelligence In The Workplace Live Webinar AIChE 2021-05-19 \(oncareersuccess.com\)](#).
- Enter your name and email address to view the archived recording.

In summary, be a lifetime learner. Learn and apply soft skills and other foundational skills that McKinsey defined as necessary to "future-proof" yourself for the future world of work.

References:

1. B. Hancock, S. Lund, B. Schaninger, and L. Rahilly, "Grabbing Hold of the New Future of Work", p. 4, McKinsey & Company, May 2021.
2. Pat Cross, "Applying Emotional Intelligence In The Workplace" Webinar for Professional Development, OnCareerSuccess Inc., May 2021.
3. M.T. Hoske, "Control Engineering Career and Salary Survey", p. 34-36, Control Engineering, May 2021.
4. M. Dondi, J. Klier, F. Panier, and J. Schubert, "Defining the Skills Citizens Will Need In the Future World of Work", McKinsey & Company, June 2021. "How Is The COVID-19 Vaccination Campaign Going In Your State?", NPR, June 1, 2021.

AIChE News

The AIChE hosts technical conferences around the world. Check www.aiche.org/conferences for registration and presentation information for this year's events.

| Dates | Event |
|----------------|---|
| July 8 – 10 | 2021 Brazil Student Regional Conference |
| July 11 – 15 | Metabolic Engineering 14 |
| July 13 – 14 | Trends in Invigoration of Manufacturing and Engineering (TIME) |
| July 19 – 21 | 2021 Virtual International Mammalian Synthetic Biology Workshop (mSBW) |
| July 19 | Public Safety – Developing a Framework for Information Sharing |
| July 21 | Global Hydrogen Safety Codes and Standards |
| July 28 – 29 | 2021 BASF Sponsored Virtual CCPS Faculty Workshop |
| August 2 – 4 | 3 rd Enterprise and Infrastructure Resilience Workshop |
| August 4 – 6 | 3 rd Solar Energy Systems Conference |
| August 4 – 6 | 3 rd Sustainable Waste Management Conference |
| August 4 | Pandemic Advance Capabilities & Engineering (PACE): Current COVID Challenges |
| August 5 | Pandemic Advance Capabilities & Engineering (PACE) Workshops |
| August 16 – 19 | 2021 Offshore Technology Conference |
| August 17 – 18 | RAPID DEPLOY: Modular Technologies for Capturing and Converting Waste Carbon |
| August 29 | 65 th Annual Safety in Ammonia Plants and Related Facilities Symposium |

Upcoming VLS Meetings

The VLS has monthly meetings. The following meetings have firm dates and speakers.

| Dates | Topic |
|----------|--------------------------------------|
| Aug 2021 | Role of Nuclear in Energy Transition |
| Sep 2021 | Student Intern Competition |
| Oct 2021 | Don't wake sleeping dragons |

Past VLS Meetings

The VLS records its monthly meetings and archives them on the AIChE Academy website in case you missed a meeting or are looking for a particular topic. See below for current recordings.

| Date | Event |
|----------|---|
| Feb 2021 | Overcoming the Challenge of Applying Chemical Engineering Principles to the Art of Winemaking |
| Jan 2021 | DIERS Technology Fundamentals II: VLS January 2021 Webinar |
| Nov 2020 | Protecting Lives and Livelihood: Hazardous Materials Classification and its Impact to the Supply Chain |
| Oct 2020 | Chemical Safety Board (CSB) Accidental Release Reporting Rule |
| Sep 2020 | Internships and Undergraduate Education |
| Aug 2020 | Physical Property Models to Design Better Chemical Products |
| Jul 2020 | Julia - A Fresh Approach to Technical Computing |
| Jun 2020 | The Next Digital Leap to AI (An Interactive Webinar) |
| May 2020 | Challenges and Benefits of Remote Operator Training using Cloud-Deployed High-Fidelity, First-Principles Based Standard Operator Training Simulators (SOTS) |

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| Apr 2020 | NASEM Chemical Engineering in the 21st Century Study: Give your input! |
| Mar 2020 | Is Your Focus Your Magic! |
| Feb 2020 | DIERS data/standards in HAZOPS of two phase flow |
| Jan 2020 | A Brief History of Measurement |
| Nov 2019 | Using Thermal Imaging to Guard Industrial Facilities |
| Oct 2019 | Python for chemical engineers: Getting started |
| Aug 2019 | Reactive Chemical Hazards |
| Jul 2019 | Should I Py or Should I Fortran? |
| Jun 2019 | Design Considerations for Organic Electronic Materials and Devices |
| May 2019 | Why Can't You Compete Without Virtual/Augmented Reality in Your Plant |
| Apr 2019 | The Chemistry of Bourbon: The "spirit" of molecules |
| Mar 2019 | Demystifying Professional Engineering Licensure and How to Put it to Work for you |
| Feb 2019 | Municipal Wastewater and Sludge Are a Resource, Not a Waste: Coping with Tightening Water Supplies and Limited Landfill Availability |

We're in this Together

The ongoing COVID-19 situation has provided us with a reminder that even in uncertain times, AIChE is a diverse community of people who lead, create, inspire and learn—together. AIChE is here to help. Knowing that many of our members are working virtually, AIChE has created this page to act as a hub for online content, access to communities, and communication updates. [Learn more.](#)

The Virtual Local Section's Executive Committee

Officers

| | |
|-----------------------|---------------------------------|
| Chair: | Paul Adamson |
| Senior Vice Chair: | Aaron Sarafinas |
| Vice Chair: | Steve Treese |
| Immediate Past Chair: | Dan Lambert |
| Secretary: | Laura Gimpelson |
| Treasurer: | Jennifer Brand |

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| | |
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| Member Care | Fred Fischl |
| Publicity | Paul Wissmann |
| Newsletter | Mario Arredondo |
| Programming | Scott Clarke |
| | Kirsten Rosselot |
| Member Feedback | Richard Evans |

Did You Know?

You can visit [the VLS website](#) for more information on the Virtual Local Section's mission, activities, and membership. Also at this website, AIChE student members and VLS members can watch previous webinars for free.

Subscription Information

Current fully paid members of the Virtual Local Section receive this newsletter. If you wish to update your email address, contact the AIChE's New York Office for Permanent Address Corrections at xpress@aiche.org or 1-800-242-4363.

Continuing Education Credits

Members of AIChE can receive 1 hour of continuing education/professional development credit for attending Virtual Local Section webinars. Send your name, the certificate number on your professional engineer's license, and the licensing entity (state or country) in which you are licensed to our Secretary, [Laura Gimpelson](#), to receive one hour of continuing education credit for attending this meeting.