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February 2021

SAE BRITISH COLUMBIA

An SAE International® Section

2019-2020 GOLD SECTION

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• Vice Chair

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UPCOMING EVENT:

'Autonomous Vehicles: Role of Hardware-in-Loop Simulation In Ford's Platform'

WHO: Adit Joshi
Research Engineer at Ford Motor Company

WHEN: February 22, 2021, starting at 6:00 PM

WHERE: Most, if not all of our events will be hosted virtually this year. This event will be hosted through Google Meet. Please register to obtain the meeting link.

WHAT: The automotive industry is heading towards the path of autonomy with the development of autonomous vehicles. This presentation will provide an overview of autonomous vehicles and discuss why there is an urgent need for this technology. It will also focus on the requirement of redundant mechanical systems and controls as part of the autonomous vehicle platform since there will be no driver backup present in highly automated vehicles. This presentation will elaborate on the role of simulation in accelerating development and testing of autonomous vehicles as in-vehicle testing for autonomous vehicles will be considered expensive, time-consuming, and unsafe due to the number of scenarios and driven kilometers required for validation. In particular, a powertrain and chassis hardware-in-the-loop (HIL) simulation of the autonomous vehicle platform and the correlation of the performance of the corresponding subsystems with those of the actual autonomous vehicle will be presented. The testing setup for HIL simulation which includes powertrain controllers and actuators, redundant brakes and steering controllers, alongside full brake hydraulics hardware will be discussed in detail.

RSVP: RSVP using this link: register.saebritishcolumbia.org
And email: info@saebritishcolumbia.org for more information.

COST: ***Free for all to attend.***

REVIEW OF LAST EVENT: 'Vehicle Assembly Manufacturing—Operations, Management, and Development'

By: Colin Keddie, P.Eng, MBA, SAE BC Section Chair

SAE BC was pleased to host Dr. Herman Tang on Monday Jan 25th, as part of our ongoing series of virtual speaker events. The presentation was entitled ***"Vehicle Assembly Manufacturing Operations, Processes, and Future",*** and was an excellent overview of modern day vehicle manufacturing methods in America. Dr. Tang has a long history of automotive experience, bouncing back and forth between working at various universities and automotive companies, and had been with Fiat Chrysler for about 16 years as a leading Engineering Specialist. Currently at Eastern Michigan University Dr. Tang aims to bridge the gap between Academia and Industry, using his technical expertise in: Assembly Systems Development, Process Planning, Tooling Development Management Lean Manufacturing, Dimensional Quality Control, Welding, Launch Support, Project Management.

Dr. Tang gave our members a basic overview of modern day automobile factories, using several real world examples including one of Hyundai's plants in Alabama. He cited that automation has grown tremendously over the past 20+ years, and that robots generally increase quality (very repeatable/reliable). Lots of plants have stamped parts made overseas and imported but the overall plant includes a general flow between incoming raw materials, stamping, body work, painting, general assembly, and engine assembly. Dr. Tang pointed out various different welding techniques that are normally done robotically, including spot, laser, draw arc, and friction stir welding. Additionally, we reviewed various mechanical joining techniques such as self piercing rivets, clinching, and adhesive bonding, the latter of which has been used more frequently lately due to the use of different metals such as steel and aluminum in vehicles. Adhesive bonding also adds to in vehicle sound dampening, which is an additional bonus when used for automotive assembly.

We watched a few videos of modern day assembly plant operations while Dr. Tang explained each process, and learned how humans and robots interact in order to produce vehicles on a mass production assembly line. In particular, trained humans are skilled at QA applications finding the smallest flaws that would normally be undetectable to most people. The future of vehicle manufacturing includes a strong push towards improved quality, reduced cost, reduced weight, and flexibility in manufacturing variety. There are significant challenges ahead, including the rising use of alternative materials such as composites to reduce overall vehicle weight. Vehicle manufacturing today is developing with comprehensive business cases, technology development, and considerations for social impacts of technology use (robotics in particular) versus the employment of humans while considering the overall impact on local economies.

SAE BC would like thank Dr. Tang for his time, and encourage you all to attend our next virtual meeting coming up on Monday Feb 22nd at 5:30pm when we welcome Adit Joshi for his presentation on ***"Autonomous Vehicles: The Role of HIL (Hardware-in-the-Loop) Simulation in Testing Ford's Autonomous Vehicle Platform"***. We hope you all can attend and engage with these high level presenters, as well as the rest of our membership. Look for a registration link coming in your next SAE BC Newsletter, as well as through social media and our website. We look forward to seeing you!

JOIN THE BOARD:
'Secretary, and Vice Chair'

SAE BC has two open Board positions. Please inquire if you are interested in getting involved. Supporting SAE BC looks good on one's resume as volunteer work for the community.

Position: Secretary

Description: We are looking for someone who can attend each board meeting and using a laptop, record the meeting minutes along with action items as discussed. This is an important position and requires someone who can listen/understand/interpret and type/format documentation all at the same time. The position provides a significant amount of power to the person responsible, as they can influence the action item details and overall direction of the SAE BC Chapter. Supporting SAE BC also looks good on one's resume as volunteer work for the community.

Position: Vice Chair

Description: A Vice chair is needed to help support SAE BC in general by attending local chapter meetings and helping to drive action items. The vice-chair may lead meetings when the chair is unavailable, and support the board as required. New ideas are always welcome. Supporting SAE BC also looks good on one's resume as volunteer work for the community.

QUESTION OF THE MONTH

'With more options for electric vehicles than ever before, do you have plans to purchase one in the next 0-5 years?'

You'll have a chance to respond to this question when you register for the upcoming event.

2020-21 TENTATIVE SCHEDULE

Most events will be held virtually this year so you can join remotely. Below is a list of the upcoming events for this season. ***Please mark your calendars!*** Events are typically held on Mondays unless stated otherwise. Please note that the Board Meetings are open to anyone. Please let one of the board members know if you are interested in attending and/or getting involved!

A reminder to Professional Engineering members that attending SAE events contributes to their Continued Professional Development (CPD) as outlined by Engineers and Geoscientists of BC.

February 8, 2021	Board Meeting
February 22, 2021	Speaker: Adit Joshi Autonomous Vehicles: Role of Hardware-in-Loop Simulation In Ford's Platform
March 15, 2021	Board Meeting
March 22, 2021	Event – TBD
April 12, 2021	Board Meeting
April 26, 2021	Student Showcase Event
May 10, 2021	Board Meeting

SAE BRITISH COLUMBIA
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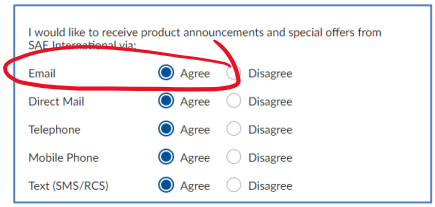
The BC Section of SAE International is now in its 74th year, since being officially designated as the SAE British Columbia Group on June 12, 1946. The Section has about 250 regular members with additional student chapter members at UBC, UVic, SFU and BCIT.

The majority of our Members live and work in the Lower Mainland, and represent a wide spectrum of technical interests. We have a regular program of local events, mostly centered in the Vancouver area, although we have had meetings elsewhere in BC on occasion.

KEEP RECEIVING OUR NEWSLETTER

If you are an SAE member, but did not receive this e-mail directly, you may have opted out of SAE e-mails. Please log into SAE.org, and under mySAE, Account Profile, Communication Preferences, please ensure the following item is checked:



VISION STATEMENT

A society dedicated to supporting mentorship, career growth and networking for our members and the local mobility industries in BC.

MISSION STATEMENT

To be the #1 resource for events, networking, and career support for mobility Engineers and the Industry in BC.