Welcome to the IEEE Seattle Engineering Conference

September 23, 2022

Bellevue Washington
Speaker Line up:

Dr. Lynne Robinson, ‘State of the Region talk’, City of Bellevue Mayor
Pamela Hamblin, ‘Distributed Energy Resources for Utilities’, NUEnergy Solutions, CEO
Syris Valentine, Motivational Speaker, Space Sustainability Technologies
Wendi Walsh, ‘Paradox of Skepticism and Innovation’, HCL Technologies
Shaun Rogers, Advance Metering, Regional Director Energy Industry, Trynzic
Paul Kostek, Systems Engineer, Medical Devices Aerospace Engineering
Kathleen Kramer, ‘Avionics Systems – Considering AI Techniques where Safety is Critical’
Mathew Varghese, ‘Artificial Intelligence’, Tupl
Abir Chermiti, ‘Female Entrepreneurship; Opportunities and Challenges’, Software Engineer
Sreenivas Rangan Sukumar, Data and Artificial Intelligence Machine Learning, CTO Hewlett Packard
Cheri Litson, ‘Risk Management for Printed Circuit Board Designs’, Inst. ECC
John Gentile, ‘Hydrogen Fuel on site’, Cascadia Technologies
Richard Platt, ‘Robotics’, Senior Managing Partner & Chief Engineer for the Strategy + Innovation Group
Travis Moore, ‘Space Electronics’, JEMCO
Camila Simons, ‘Wind Turbines’, Wind Turbine Engineer, DNV
Sanjay Samuel, ‘Hydrogen Locomotives’, Sound Transit
Tanuj Khandelwal, ‘Power Systems Microgrids’, eTap CEO
Allen Huang, ‘Fast Charging EV’, Commissioning Engineering at Siemens Mobility Sound Link Light Rail Syst
Lunch presentation with Olympic Athlete and IEEE Prize Pack give away

Live entertainment Comedian

Closing ceremony honoring our consultants, Speakers and Sponsors
Dr. Lynne Robinson, ‘State of the Region talk’, City of Bellevue Mayor


Owner of Lynne Robinson Physical Therapy, providing home care to non-homebound seniors in the Bellevue area. I specialize in fall prevention and balance training, and the promotion and support of successful aging in place.

https://www.linkedin.com/in/dr-lynne-robinson-639b6464/
Bio
Pamela is an account manager at K&A Engineering Consulting. With 24+ years in her Energy career, she has developed a vast knowledge of the many dynamics involved in delivering safe, reliable, and affordable power. Those dynamics have changed drastically over the last decade due to environmental objectives and economic impacts. Her relationships with many corporate level executives at the nation's largest utilities and her extensive industry network connections reflect her highly influential reach in the market. These relationships represent every facet of the Energy dynamics our world currently faces.

Because of her relationships and industry experience, she is regarded as a Subject Matter Expert for safety and reliability of legacy power generation, grid stability and resiliency, energy economics, and alternative green energy resources.

Pamela has been invited as an expert speaker for respected industry conferences and has been published in numerous industry magazines. Her published work includes multiple technical papers for ASME as well as feature articles in Power Engineering Magazine and Inspectioneering Journal.

Additionally, Pamela serves as an expert panelist on the ASME Technology Advisory Panel (TAP) for the Pressure Technology group and the ASME Power Plant Cycling Executive Advisory Committee.

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As technical professionals, we bring a level of skepticism to our work. We’re paid and perhaps are fueled by solving complex challenges. We often rely on what we know as opposed to what could be. We often work in organizations where our voices are not heard, where risks are managed out quickly, where failure is feared, and yet, innovation is critical to solving problems and keeping us interested in our work.

Let’s dive into Nancy Duarte’s work of the Innovation Lifecycle and see how you can set up your organization, your team, and yourself to innovate and be heard.

Bio
With degrees in Electrical Engineering and Organizational Development, Wendi combines technical and organizational expertise to work with individuals, teams, and companies to understand human reaction and interaction (people) and implement complex situations (technology). This gives her the foundation to engage senior leaders in conversations that directly impact strategy, planning, and budgets. Wendi accomplishes all of this by listening and asking generative questions, meeting stakeholders where they are and making room at the table for more voices, co-creating what is needed, focusing on and accentuating strengths, setting up the team for success, and delivering on the goals.

She is particularly adept at translating between business and technology groups and across country and company culture to align people to work together to achieve a goal. She creates capacity and leaves behind a framework for companies to apply to future challenges.

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The lack of real-time, high-fidelity observability in the low voltage grid has been the consequence of technology limits of the age, leaving hard and soft value on the table for distribution utilities. The introduction of Advanced Metering Infrastructure (AMI) opened the way towards capturing this value for stakeholders. AMI is a large, high-profile investment, and the path to implementation is often through an application process rooted in a rate case, an AMI Proposal, or a portion of a broader Grid Modernization proposal. This initiative has proven to have low success rates of transformation, as low as 30% adoption per leading research firms.

There is a purposeful way in unlocking this value through digital transformation efforts that are rooted in higher success rates through Trynzic’s Sense, Triage, and Act model via the GridOps platform. This value realization chain will be shared within a short presentation of Trynzic’s next gen solution starting from the As-Is mindset to the future state of Utility Grid Operations.

Bio: Shaun T. Rogers

Shaun Rogers has led an impressive career as a sales and operation professional in his 15 years working within the technology space in numerous verticals such as fintech, construction, utilities, as well as a successful business owner.

Serving as the Regional Director at Trynzic, Shaun plays a major role in the go-to-market strategy of Trynzic’s flagship product, GridOps. Through his commitment to this role, he continues to help Trynzic reach a broader audience by introducing the awesome power of AMI data and educating the utilities space in how to leverage the technology to their benefit.

He has a Bachelor of Science, Business Administration & Healthcare Management from Colorado State University.

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Getting Started with Systems Engineering, Requirements Management and Tools

As projects grow in complexity with multiple systems being integrated into Systems of Systems the need for systems engineering on projects has increased. Traditionally thought of as an aerospace industry skill the need for SE has grown in many industries including medical device/healthcare industry. A systems approach is needed to ensure that the design requirements are clearly defined, allocated and traced to subsystems developers (whether internal or suppliers). Using MBSE (Model-Based Systems Engineering) and associated tools improves the elicitation process, allocation, traceability and assessment of requirement changes. These can also support reuse of requirements and improve project turn-around. An organizational approach to developing SE processes and standards is essential for implementation of SE. Providing access to training and adopting tools with a clear expectation of results is an essential to project success. We’ll use medical device development as an example of how systems engineering and tools can help an organization to improve projects performance.

Bio
Paul Kostek – Systems Engineer – Air Direct Solutions & IEEE Senior Member

Paul J Kostek is a Systems Engineer with Air Direct Solutions LLC, a consulting firm in Seattle, Washington. He works with companies in the aerospace, defense, medical device/healthcare, commercial space and ground transportation industries. Paul is experienced in requirements development/management, architecture, risk management, interface definition, verification, MBSE and project planning. This includes defining user needs, system/subsystem requirements, system architecture, risk assessments, interface control documents and verification and validation planning.

In 1999 Paul was the President of IEEE-USA, and a member of the IEEE Board of Directors. He served as President of the IEEE Aerospace & Electronics Systems Society in 2000-2001 and was a candidate for IEEE President-Elect in 2001. He Chaired the American Association of Engineering Societies in 2003. And served as VP Conferences for the IEEE Intelligent Transportation Systems Society

He was General Chair of the 2004 IEEE Intelligent Transportation Systems Conference, Chaired the 2006 IEEE/AIAA Digital Avionics Systems Conference and was the Chair of the 2011 and 2012 IEEE Global Humanitarian Technology Conference.

Paul is a Senior Member of the IEEE, an Associate Fellow of the American Institute of Aeronautics and Astronautics, a Senior Member of the International Council on Systems Engineering (INCOSE) and SAE. He is an adjunct professor at Seattle University and received his BS from the University of Massachusetts, Dartmouth.

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The description of Artificial Intelligence (AI) has continually been evolving over past few decades in correlation with the advancement in technology itself. In the aviation context, AI doing things conventionally performed by humans could have applied to even older dynamics-based implementations of an autopilot but now more implies judgement reserved in past to human pilot, and clearly applies to unmanned aircraft systems (UAS). The ingress into numerous spheres of life has been aided by progress in some of the supporting technologies, namely, high-powered parallel processing, big data analysis and cloud computing, deep learning algorithms. There is a real challenge to aviation safety certification that has been established upon verifying that all possible safety-critical conditions have been identified and verified.

Bio
Kathleen A. Kramer is a Professor of Electrical Engineering at the University of San Diego. A Distinguished Lecturer for IEEE Aerospace & Electronics Systems Society, she maintains an active research agenda in the areas of multisensory data fusion, navigation, and cyber security in aerospace systems, and leads the AESS technical panel on Cyber Security. She worked to develop new engineering programs as a founding member of the faculty, eventually became the chair of electrical engineering, and then served as Director of Engineering (2004-2013), providing academic leadership for all of the university’s engineering programs. She has also been a Member of Technical Staff at several companies, including ViaSat, Hewlett Packard, and Bell Communications Research. She is a leader in engineering accreditation activities for IEEE with ABET and has contributed to several recent advances in the criteria, impacting university education in 41 countries. Author or co-author numerous publications, she speaks on a wide variety of technical and professional topics. She received the B.S. degree in electrical engineering with a second major in physics from Loyola Marymount University, and the M.S. and Ph.D. degrees in electrical engineering from the California Institute of Technology.

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Mathew Varghese, ‘Artificial Intelligence’, Tupl

Bio
Mathew is an ENTP personality with depth of knowledge in Machine Learning, Deep Learning and Computer Vision and a breadth of knowledge in 3D printing, IoT, Product management, Product prototyping, App development, music and web development. His strong presentation skills would be very useful in any team setting.

With a background in Electrical and Computer Engineering and industry experience in machine learning and data science, he is constantly looking for opportunities to learn new skills and technologies and further implement them into the practical world. His entrepreneurial ventures and initiatives are a reflection of his creative and hardworking nature. He is sure that his varied experiences leading multiple teams in academic and professional settings along with his deep technical skills in Machine Learning and Data Science will be an asset to whichever company he joins. He is currently looking for fall 2022 internships for opportunities to Kickstart his career in ML.

GitHub: https://github.com/mathewvarghesemanu
Personal Website: https://mathewvarghese.space

Technical skills-
• Machine Learning tools and platforms: Pytorch, Tensorflow, Scikit-Learn, Keras, Pandas, Numpy, matplotlib, Seaborn, Jupyter Notebook, Google Colab
• Languages: Python, C++, Arduino
• Web Dev: React, Flask, Flutter
• Databases: MySQL, DynamoDB
• Tools/IDEs/Technologies: Git, Jira, Anaconda, UNIX
• Designing Software: Adobe Photoshop, Adobe After Effects, Adobe Premiere Pro, CorelDRAW

In his free time he likes to play badminton, ride a bicycle, play guitar, write songs, play games and cook.

https://www.linkedin.com/in/mathewvarghesemanu/
Abir Chermiti, ‘Female Entrepreneurship; Opportunities and Challenges’, Software Engineer

Bio
Currently, Ms. Chermiti is a Harvard Business School Student who looking to strengthen their business management and strategy execution skillset. She is also, a 2020 Award-winning Women in Tech Ally. A Software Engineer and a Technical Team Leader who has a boundless knowledge in computer concepts & fundamentals. Abir has a large experience working with engineers and agile teams in diverse workplaces and organizations which helped her to acquire great communication and interpersonal skills that allowed her to be successful in initiating & building relationships and partnerships between her team and clients.

For many years, Abir has been a huge supporter for women in tech & STEM and a true believer that women can do more if they are given the space to build and create. She started her own podcast show in the middle of a global pandemic; EllePod, a podcast series that features stories of women in tech and business to support women and young individuals in their career path and empower them to embrace their digital and entrepreneurial Potential.

https://www.linkedin.com/in/abirchermiti/
Sreenivas Rangan Sukumar

Bio
An artificial intelligence visionary, a machine learning researcher, a data science specialist and a serial-entrepreneur that thrives on (i) impactful (ii) creative and (iii) challenging opportunities to bridge technology, business and people towards "remarkable" products.

Leadership Style: Inspire with purpose, motivate with goals, mentor for growth, hire diverse complementary skills and handsomely reward excellence.

Experience: As a leader and researcher, I have: (i) won new projects worth $2+ million/year, (ii) executed on projects totaling $40+ million, (iii) hired and managed teams of size 15+ members and (iv) produced 2-20x return-on-investment. As a data science specialist, I have implemented algorithms to slice and dice data for new insights that explain the "why". As an analytics architect, I have built platforms for business problems requiring scale and performance. As an AI/ML researcher, I have designed and implemented data-driven knowledge discovery algorithms for in-database, in-memory and in-situ hardware architectures. As an entrepreneur, I enjoy the journey of taking innovative technological solutions to solve pain-points of customers (Accelerating start-up evaluation to $20+ million in less than 2 years).

Evidence: With over 70 publications (patent applications, software copyrights, book chapters, journals, technical reports, peer-reviewed conference and workshop proceedings) and over 40 talks (invited presentations, keynotes, panels) in areas of disparate data collection, organization, processing, integration, fusion, analysis and inference, my contributions have been deployed in a wide variety of domains such as healthcare, social network analysis, electric grid modernization and public policy informatics.

Current Interests: Creative Applications of Artificial Intelligence, Algorithms, Pattern Recognition, Graph Analytics, Big Data, Data Fusion, Deep Learning, Natural Language Processing and Understanding

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Risk management is the process of identifying, assessing and controlling threats to an organization's capital and earnings. These risks stem from a variety of sources including financial uncertainties, legal liabilities, technology issues, strategic management errors, accidents and natural disasters. For a product to have market appeal, it must either be differentiated from existing products in its category, or it must create an entirely new category. In either case, the successful product offers something new to the market. That “something new” requires a design that’s never been done before. And if it’s never been done before, it’s inherently risky. At the heart of most new products is the Printed Circuit Board (PCB). Its success is dependent upon the entire product team from the top down. The common thread for everyone to be aware of and understand is DFX.

Bio
Ms. Litson is the principal in Litson1 Consulting; a Master Instructor Trainers (MIT) for the IPC Certified Interconnect Design basic (CID) and advanced level (CID+) through EPTAC (since 2003); and a part time Instructor for Basic Electronics at the Everett Community College, Everett, WA.

Since her first PCB Design was in 1978 (on a light table), I have expanded my skills and knowledge in Mechanical, Electrical, manufacturing engineering, network development, and education through multiple venues, companies, and disciplines.

She established Litson1 Consulting in 2008 to support multiple small, medium, and large-scale companies with PCB Design projects. I have developed and presented independent, targeted educational programs for engineering staff, non-technical personnel, local community colleges, and overseas clients.

Her experience in the medical, aviation, and commercial sectors have given her a broad perspective of the PCB industry. She is often asked to write articles on targeted PCB subjects for major industry publication. She delights in finding new ways to develop products while staying grounded in the basic concepts of physics and the capabilities of the “real world” at the current moment.

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On-Site Green Hydrogen Production; a faster more reliable energy transition? What are the practical considerations for a more rapid transition to Zero Carbon goals?

John Gentile, ‘Hydrogen Fuel on site’, Cascadia Technologies

Bio
John A. Gentile, Managing Director, Cascadia Energy Technologies, LLC. Mr. Gentile, co-founded Cascadia Energy Technologies & Cascadia Green Solutions, after career long application software experience in the North American energy and electric utility market. He last served as Account Executive for DNV Kema Energy & Sustainability (DNV GL). He is also a licensed Commercial Driver (CDL) with experience in heavy truck and warehouse tractor-trailer operations. Books of interest; 'When Trucks Stop Running: Energy and the Future of Transportation.'

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New technology forecast on where Robotics is going based on current industry trends then adding in the Trends of Engineering System Evolution that some of the companies are using in the Robotics Industry, specifically Hyundai and Boston Scientific (a subsidiary of theirs), that are giving them the edge against their competitors. There's a whole lot more too, with all of the different ways that Robotics is being commercialized on a wider scale, e.g., Amazon's purchase of Roomba, and how that is all about the data of Internet of the Home and how they, Amazon's AWS is one of the driving factors here. Keeping in mind that AWS is market capped at something like $3T, which makes it a major player driving this along with how Drones are now being used in completely different ways than they were before, the use cases got worked out. The technology finally got more mature and robust enough for more arduous, hard-to-do manual work of transporting items w/in the warehouse, which is the same for the factory. Then we have network effects taking over, then we can start talking about how to secure all that, and that's simply standardization across all of the major networks of IoT, IoF, IoH, IoX.

Bio
Richard Platt is the Senior Managing Partner & Chief Engineer for the Strategy + Innovation Group and is the last Innovation Master of Intel Corporation. In his last role at Intel he was chartered by the CEO, reported to the CIO and the Senior Executive Vice Presidents for Intel High Volume Manufacturing and R&D. His program clawed back $212.5M in ROI and embedded a "World Class" set of Problem Solving methods for the design, R&D, Technology Development and Manufacturing communities across the enterprise. He and his team were awarded the Intel Achievement Award, the 2nd highest award you can get. Currently, he supports the Semiconductor, Aviation, Aerospace, High-Tech, Electronics, Defense & Military Industries. He often bangs on about "He Who Disrupts, Wins Moore & More than the Other Guy", but most people aren't paying attention. He's been doing Bonsai & Japanese Gardening for +30 years.

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Since the early 1970s, when microprocessors became commercially available, they quickly became a common part of all aircraft control and indication systems. With an ever-increasing number of microprocessor-based airborne applications, safety regulations and software standards like RTCA DO-178 evolved, demanding rigorous requirements and processes for software development, testing, life cycle, and certification. Over the years, as the development of aerospace software applications increased, engineering costs development and product certification cost exponentially increased, having a significant impact on the market.

The landing Gear Actuation system is one of many aircraft systems whose control functions are based on microprocessors and software applications.

Neno Novackovic, PE

Considering that the landing gear actuation control algorithm can be defined in the form of the State Machine, this article intends to demonstrate that such a controller can be realized as wired logic hardware without software implementation. Control algorithm and logic structures were defined based on generic aircraft Landing Gear Actuation system, which is common for many midsize commercial aircraft. The full functionality of the control algorithm was defined and simulated together with the initial conditions, power-up recovery states, and reverse commands.

Although Landing Gear Actuation control is an aircraft safety-critical function, the presented design and hardware implementation in accordance with RTCA DO-254 can qualify as “Simple Electronic Hardware.” With such a design concept, the cost of development, implementation, and certification can be significantly reduced compared with the same controller realized with microprocessors and software. The proposed hardware solution for the Landing Gear Actuation controller will provide weight sawing, robust design, simplified fault detection, and a more efficient system diagnostic process.

The major advantage of the proposed landing gear control algorithm implementation with hard-wired logic compared to the microprocessor-based software application is in time required for development and certification. Having aircraft critical control functions embedded in simple hardware provides more flexibility when a redundant control loop is required. It is important to mention that a control algorithm with simplified hardware implementation opens more opportunities in the system expansion where microprocessor-based, less critical applications can be combined. Such applications may include system health monitoring, diagnostic, and maintenance functions.

Bio

Mr. Novakovic is a Senior Principal Engineer and has more than 30 years of experience in various aircraft systems design, integration, testing, and certification. In his early career, working for the Department of Defense in former Yugoslavia, he was a part of the R&D team, developing turbojet engine control and health monitoring system. At the beginning of the nineties, he moved to Canada and made the transition to the area of Landing Gear Systems design and integration. In 2009, he joined Collins Aerospace (formerly Hamilton Sundstrand), Aircraft Electric Systems division, and since he has been developing electric power systems for major commercial programs, including Boeing 787, 777X, KC-46, Airbus A350, A220, Embraer E2, COMAC 919, and Irkut MC21. In recent years, his focus has been on Aircraft Electrical Power Systems and Secondary Power Distribution Optimization, where he contributed with several U.S. patents and technical publications. His technical articles are published in SAE Aerospace journals and presented at international conferences and seminars. Neno has a BSEE and MSEE.

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Travis Moore, ‘Space Electronics’, JEMCO

Bio
Specialties: Manufacturing for Space, Launch, Defense, Medical and Aerospace industry.
- Quality Control / Quality Assurance (PPAP, APQP, FMEA)
- LEAN / 5S / Six Sigma
- Supply Chain Mgmt
- Business Development
- IT Management: CMMC / NIST
- Intellectual Property
- Organizational Effectiveness
- Marketing
- HR: Recruiting, Compensation, Onboarding, Benefits Administration
- AOG
- Consulting
- Leadership Development
- Strategic Collaboration
- Automation
- Strategic Partnerships
- Product Development
- Sustainability
- Renewable Energy

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Ms. Simons has always stood by the belief that she should leave the world a little bit better than she received it, and for her, the bridge between impact and engineering is renewable energy. She is excited by the exponential growth in renewable energy technology.

Camila is currently working as a Wind Turbine Engineer at DNV, based in Seattle, WA specializing in technical risk assessment and construction monitoring for utility-scale wind farms as a part of the Turbine Technology, Independent Engineering Team. She previously worked at Acciona Energia where I streamlined the development of large wind farms and solar plants all around the globe and at MTPV, she worked on a product that converts waste heat into electricity, focusing on internal design reviews and projects. Through her travels, she has been able to visit solar and geothermal plants in Brazil and learn about fluid dynamics through the lens of hydropower plants in Tasmania.

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Sanjay Samuel, ‘Hydrogen Locomotives’, Sound Transit

Sanjay Samuel

Bio

Mr. Samuel is experienced in managing cross-functional teams in designing and implementing infrastructure development projects. My background and expertise in lean six sigma, kaizen, 5S, and agile methodologies allow for sustainable and positive results. Exceptional team leader with a clear understanding of defining clear, direct, and decisive lines of communication between engineering teams to achieve goals. Builds and directs responsible and responsive teams with a climate of openness, honesty, real-time feedback, and clear direction.

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Bio

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Allen Huang, ‘Fast Charging EV’, Commissioning Engineering at Siemens Mobility Sound Link Light Rail Syst

Bio
An experienced EV charging electrical engineer with strong programming experience.

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Mr. Brisbois is an Electrical Engineer with design experience, project management and leadership skills. He has worked in the building, space and technology sectors. He has hosted and presented at many technical sessions and conferences. He is a technical competent leader and able to get things done. Mr. Brisbois has his Professional Engineering license in the State of Washington, Oregon, Texas, Illinois, California, and Missouri. His focus is on leading sustainable energy projects. He is a board member on several technical organizations.

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Thank You!

For joining us today for IEEE Seattle Engineering Conference

We will see you on December 9, 2022 for the IEEE Miami Tech Conference