**Extended Agenda For The Science and Engineering Division of the National Federation of the Blind 2025 Annual Meeting**

6:30 PM July 10, 2024, The Marriott New Orleans Hotel, New Orleans, Louisiana

# Annual Meeting

The Science and Engineering Division annual meeting will be held on Thursday, July 10, 2025, from 6:30 PM to 10:00 PM, in Room Studio 6, New Orleans Marriott.

To either become a registered member of the Science and Engineering division, or to renew your membership, go to [NFB Division Join Or Renew](https://www.nfb.org/divisiondues). The dues are $5 a year per person. Please do not make any STEM scholarship donations on this page because the NFB is not yet equipped to separate dues payments from donations on this web page.

You may donate to the NFB at “<https://www.nfb.org/donate>”.

6:30 Registration

7:00 Call to order - John Miller

7:01 Inclusive Innovation: striving for full participation by blind people in technology from concept to release – Jonathan Mosen, jmosen@nfb.org

7:20 Middle School And High School Accessible Graphics That Can Be Viewed With A 40-Cell Braille Display, By The Graphiti, And By Graphical Printers – John Miller, Johnmillerphd@hotmail.com

7:40 Expanding Access: New Tools from Orbit Research - Venkatesh Chari, v.chari@orbitresearch.com

8:00 Making Biochemistry Labs Accessible with Universal Design - Bryan Shaw, Bryan\_Shaw@baylor.edu

8:20 Getting children involved in STEM and inclusivity through podcasts – Martin Storksdieck, Storksdieck@oregonstate.edu

8:40 The Latest Updates For Independence Science's New Graphical Analysis With JAWS – Ashley Neybert, aneybert@independencescience.com

9:00 Self-Efficacy of Blind Students Learning Mathematics – Kyle Steinle, kyle.j.Steinle@gmail.com

9:20 Inclusio: AI-Driven Accessibility Platform for Enhancing Multimodal Visual Content Output – Seyoon Choi, contact@inclusiocommunity.com

9:40 Business Meeting

Secretary's Report

Treasurer's Report

Division Pledges:

The Jacobus tenBroek Memorial Fund supports the NFB center in Baltimore.

The White Cane Fund: These dollars go directly to the general treasury of the Federation.

The Kenneth Jernigan Fund: The proceeds from this fund are used to bring a number of attendees to their first national convention.

Scholarship Pledges

10:00 Adjourn.

For any questions, please contact John Miller at johnmillerphd@hotmail.com.

# A summary of the presentations follows.

## Time: 7:00

Title: Inclusive Innovation: striving for full participation by blind people in technology from concept to release

Author: Jonathan Mosen, jmosen@nfb.org

Abstract: The National Federation of the Blind’s Executive Director of Accessibility Excellence, Jonathan Mosen, will outline some of the principles employed by our Center of Excellence in Non-visual accessibility (CENA) when advocating for a more accessible world. He will discuss the challenges and opportunities in the current environment.

Speaker Introduction: Jonathan Mosen is the Executive Director for Accessibility Excellence at the National Federation of the Blind. He is based at the Jernigan Institute in Baltimore, MD. Throughout his career, he has been a thought leader, broadcaster, podcaster, advocate, change agent, government relations professional, author, CEO, consumer organization leader, information technology consultant, Internet start-up founder, candidate for Parliament, IT product designer, and non-profit Chair.

Jonathan Mosen

Executive Director for Accessibility Excellence

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## Time: 7:20

Title: Middle School And High School Accessible Graphics That Can Be Viewed With A 40-Cell Braille Display, By The Graphiti, And By Graphical Printers

Author: John Miller, Johnmillerphd@hotmail.com

Abstract: The tactile graphic program is a MATLAB script used for data visualization. It generates PDF, PNG, and ASCII text output for exploring graphics. The ASCII text output contains data describing the graph, such as the minimum and maximum x and y values on the graph. It also contains a section of the text file with dot patterns that can be reviewed with a refreshable braille display. The dot patterns form the shape of the tactile graph. The MATLAB script may be run in Octave, which is a free Windows application.

Speaker Introduction: John Miller is the President of the Science and Engineering division of the National Federation of the Blind. John has a PhD in Electrical and Computer engineering from UC San Diego, California. John has an active interest in data visualization and supporting the learning of middle school and high school math. John is raising a middle school aged child and reviews current common core assignments.

John has authored a number of papers in engineering.

1. High Code Rate, LDPC Codes with Guaranteed Minimum Distance and Stopping Weight

2. High Code Rate Error Correction Code Design for Partial Response Systems

3. An Application of Backprojection for Video SAR Image Formation Exploiting a Subaperture Circular Shift Register

4. Applying Stereo SAR to Remove Height-Dependent Layover Effects From Video SAR Imagery

5. Impact of Ground Mover Motion and Windowing on Stationary and Moving Shadows in Synthetic Aperture Radar Imagery

6. Applying the Hough transform for detecting ground movers in synthetic aperture radar imagery

7. Map-drift Autofocus and Scene Stabilization for Video-SAR

8. Fast backprojection for video-SAR

## Time: 7:40

Title: Expanding Access: New Tools from Orbit Research

Author: Venkatesh Chari, v.chari@orbitresearch.com

Abstract: This year, Orbit Research presents two groundbreaking products. The Orbit Player is a compact, affordable DAISY and media player. It features tactile controls, multilingual text-to-speech, internet radio, podcast support, and compatibility with all major book formats. We will also demonstrate the new low-vision model of the Orion TI-84 Plus Talking Graphing Calculator, which adds a high-contrast visual display to the fully speech-enabled platform trusted by blind students in STEM for over a decade. Additionally, we’ll share some exciting new use cases for the Graphiti interactive tactile graphic display. Attendees will have an opportunity to try out all the devices during the session.

Speaker Introduction: With a background in Electrical Engineering, Venkatesh Chari has worked for over 25 years in the development of technologies involved in mobile and assistive technology products, in roles spanning engineering, management and strategic marketing.  At Orbit Research, his work has included the development of the Orbit Reader 20, the world’s first affordable refreshable braille display and the Graphiti Interactive Tactile Graphic Display.

Email: v.chari@orbitresearch.com

## Time: 8:00

Title: Making Biochemistry Labs Accessible with Universal Design

Author: Bryan Shaw, Bryan\_Shaw@baylor.edu

Abstract: This seminar will present a handful of interventions to make science accessible to children and adults with blindness and low vision. These technologic interventions utilize universal designs that might help all people learn and do science more easily. Key interventions that will be presented include: use of light-scattering tactile graphics (“lithophanes”) as universal 2D graphics; oral somatosensory perception of 3D models; and the use of 3D printed tools and machine vision to make benchtop techniques (e.g., SDS-PAGE, TLC) accessible to people with diverse physical and visual abilities. Funding for this research is provided by ongoing support from the National Institutes of Health (Institute of General Medical Sciences and National Eye Institute), the National Science Foundation, and the Robert A. Welch Foundation.

Speaker Introduction: Bryan F. Shaw

Professor

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Baylor University

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## Time: 8:20

Title: Getting children involved in STEM and inclusivity through podcasts

Author: Martin Storksdieck, Storksdieck@oregonstate.edu

Abstract: Tumble Science Podcast project for children ages 7-12 lets children and teachers follow either a listening or creation track that expands kid’s minds of who can be a scientist by letting them hear podcasts about blind scientists as well as create their own podcasts to share their own scientific discoveries. Accessible lesson plans for teachers were also created in this project to encourage accessible STEM learning for all students to give teachers ideas for how to make more inclusive classrooms using cross-cutting concepts from a variety of disciplines. This work was supported by NSF Grant number 2148711.

Speaker Introduction: Martin Storksdieck is professor at Oregon State University and director of the university-wide STEM Research Center. The center is dedicated to applied research on STEM teaching and learning in school and university settings, as well as out-of-school education and science communication, with a focus on equity and social justice. Prior to OSU, Martin directed the Board on Science Education and the Roundtable on Climate Change Education at the US National Academy of Sciences. He has more than 25 years of experience with research and evaluation in STEM-related fields and in environmental and sustainability education. He holds master's degrees in biology and public policy, and a Ph.D. in education.

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## Time: 8:40

Title: The Latest Updates For Independence Science's New Graphical Analysis With JAWS

Author: Ashley Neybert, aneybert@independencescience.com

Abstract: The new Graphical Analysis with JAWS pairs the ability to use new Go Direct wireless sensors to allow users to work with higher accuracy sensors without the worry about getting chords caught in scientific instrumentation. This allows you to have more control of voice settings than traditional Talking LabQuest, while allowing for braille support, and in-depth description of data charts. A new exciting tool for the blind in claiming more scientific equity.

Speaker Introduction: Ashley Neybert is a doctoral candidate in STEM Education at Oregon State University and works for Independence Science a company that specializes in STEM access for the blind. She asks if you haven't already done so to please meet with Martin and her after the talk or stop by our table in the exhibit hall to help with her PhD dissertation project of recording experiences of the blind in STEM.

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## Time: 9:00

Title: Mathematics Learning and the Self-Efficacy of Blind Students in Postsecondary Education

Author: Kyle Steinle, kyle.j.Steinle@gmail.com

Abstract: This presentation explores the role of self-efficacy in how blind students learn mathematics in postsecondary education. Drawing from research and lived experience, the talk examines how belief in one’s ability to succeed — known as self-efficacy — influences persistence in learning mathematics. The talk highlights common barriers blind students face and offers strategies to support their mathematical growth. Self-efficacy — a person’s belief in their ability to succeed at a given task — is central to this discussion. The presentation also shares insights from Steinle’s dissertation research on mathematics faculty who have taught blind students.

Speaker Introduction: Kyle Steinle is a doctoral candidate in Curriculum and Instruction at Texas Tech University, where he also earned a bachelor’s and master’s degree in mathematics. He has taught undergraduate mathematics as a teaching assistant and currently works as a research assistant supporting mathematics teacher preparation. His research explores the self-efficacy of mathematics faculty members who have taught blind students in higher education.

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## Time: 9:20

Title: Inclusio: AI-Driven Accessibility Platform for Enhancing Multimodal Visual Content Output

Author: Seyoon Choi, contact@inclusiocommunity.com

Abstract: Inclusio is developing an end-to-end solution for accessible content, particularly graphics found in STEM disciplines, powered by Artificial Intelligence and featuring multiple output platforms. This presentation highlights advancements in how Inclusio makes content work across three platforms: embossed tactile graphics, multimodal touchscreen displays, and audio/tactile output on IVEO. We’ll showcase how our software interprets digital graphics (like image files) and enables access on multiple platforms so that there is choice in the way content can be experienced. Additionally, we’ll demonstrate how Inclusio’s AI-driven automation platform simplifies the creation of accessible graphics, converting inaccessible content into inclusive formats. Inclusio’s strong partnerships and lived experience are driving the design of this new technology, and we will share ways for the NFB community to become involved and contribute to its evolution.

Speaker Introduction: Seyoon Choi, MSW, serves as a Product Design and Evaluation Specialist Consultant for Inclusio, a Phase II project awarded to Saint Louis University and other research and industry partners and funded by the U.S. National Science Foundation’s Convergence Accelerator Program. Seyoon recently earned his Master of Social Work (MSW) from Saint Louis University in the spring of 2024, focusing on community advocacy and leadership. He was inspired to continue working in this field through his time serving as the president of the Missouri Association of Blind Students, a division of the NFB of Missouri, and as co-chair of the Outreach Committee and podcast producer for the National Association of Blind Students. In 2021, he was selected for the Missouri Governor’s Council on Disability Youth Leadership Award and has also served as a Blind Community Enrichment Associate for Lighthouse for the Blind - St. Louis’ Arts and Entertainment Accessibility program, assisting local museums and venues in making their attractions accessible and engaging for patrons who may be blind or have low vision. He was also recently elected the second Vice President of the National Federation of the Blind of Missouri and serves as the Chair of the affiliate’s Technology Committee. With a strong passion for technology, human-computer interaction, and accessibility within the blind and low vision community, Seyoon is particularly focused on enhancing multimodal output of visual content to make it more inclusive—an area that aligns closely with the mission of Inclusio.

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