siam news

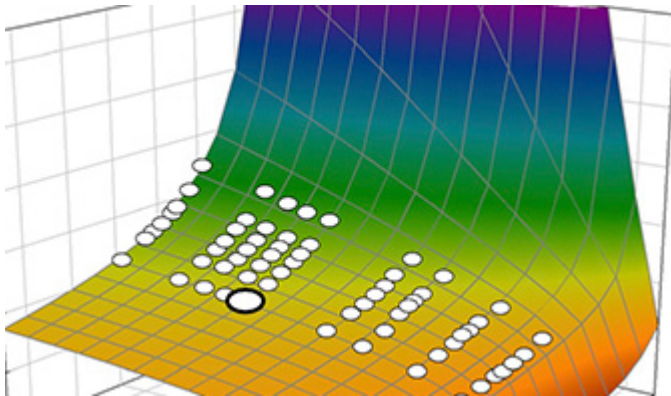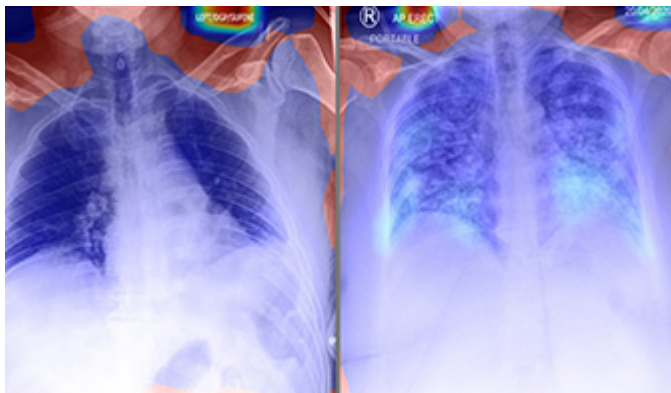**View Upcoming Conferences & Deadlines →**

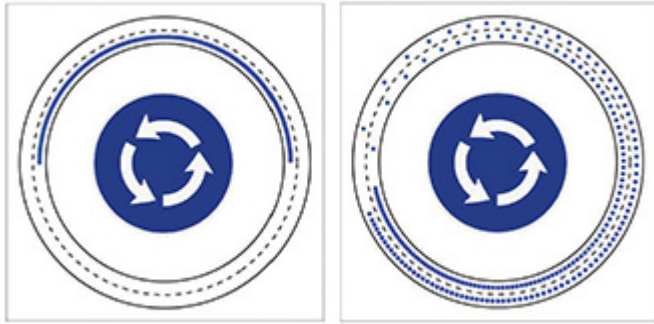## Research

Balancing Homeostasis and Health

All living things rely on homeostatic mechanisms, and homeostasis is an essential component of a wide range of biological and biomedical phenomena. Matthew Francis explores mathematical models of these systems, which promise new ways to treat diseases and imbalances. He draws from several presentations at the 2021 American Association for the Advancement of Science Annual Meeting. Read more.

Fighting a Pandemic with Medical Imaging and Machine Learning: Lessons Learned from COVID-19

Models that utilize chest radiographs and computed tomography scans to detect patients with severe cases of COVID-19 have received considerable attention. Michael Roberts, Derek Driggs, Ian Selby, Evis Sala, and Carola-Bibiane Schönlieb identify several complications of existing research and discuss avenues that scientists can pursue to close the gap between model development and deployment. Read more.

Mathematical Models of Traffic Flow

Given the prevalence of traffic in modern society, the development of unprecedented computer power and progressive tracking devices, and continued advances in mathematical research, traffic modeling has become increasingly important. Helge Holden and Nils Henrik Risebro describe a novel mathematical model that analyzes multi-lane traffic flow. [Read more](#).
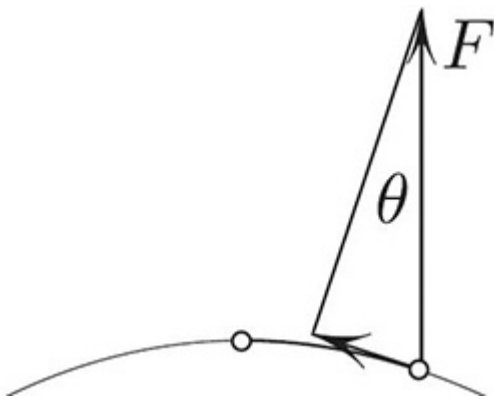

Is There an Artificial Intelligence in the House?

Medical centers around the world are beginning to incorporate artificial intelligence (AI) into their practices. However, medical AI perpetuates many of the same biases that are present in the current system, particularly in terms of disparities in diagnosis and treatment. Matthew Francis utilizes content from the 2021 American Association for the Advancement of Science Annual Meeting to address such biases. [Read more](#).

Strolling Through Jacobi Fields

A Jacobi vector field governs the separation of two nearby geodesics, to the leading order; the Jacobi equation is the linearization of the geodesic equation around a geodesic. In mechanical terms, the distance between two point masses that are sliding abreast on a surface in the absence of gravity and friction satisfies a Jacobi equation to the leading order. Mark Levi tells us more. [Read more](#).

Students and Education

New Jersey High School Team Wins Top Prize for Models that Optimize High-Speed Internet Connectivity

Given the world's increased reliance on high-speed internet, the topic of internet connectivity lent itself well to the 2021 MathWorks Math Modeling (M3) Challenge. A team of five high school students from Livingston High School in Livingston, N.J., took home the top prize of $22,500 for their sophisticated mathematical models that tackled this year's three-part problem to combat the "digital divide." Read more.

Exploring COVID-19's Impact on Undergraduate and Graduate Education

In addition to the potential knowledge gap caused by the shift to remote learning over a year ago, COVID-19 has taken a mental and emotional toll on both students and educators. Kathleen Kavanagh, Robyn Hannigan, and Joe Skufca explore the pandemic's impacts on higher education by examining a specific two-course sequence at Clarkson University in 2019 and 2020. Read more.

From the Blog

- Quantifying the Impact of Media Strategies on the Public Belief
- Social Learners Impact Outcome of Group Decision-making
- Sentiments Regarding COVID-19 Impact Disease Spread
- Analyzing the U.S. Public Health Impact of E-Cigarette Use in Adults and Adolescents
- Controlling the Spread of Visceral Leishmaniasis with Deltamethrin-Impregnated Dog Collars
- June 2021 Prize Spotlight
- Modeling the Impact of Demographics on Human Migration due to Climate Change
- Assessing Racial Bias and Homophily in Professional Hierarchies
- Mathematical Model Analyzes the Severity of Disc Degeneration in College Students
- Information Theory Quantifies Interactions Among Car Drivers

SIAM Updates

SIAM Partakes in the 2021 Virtual National Math Festival

The National Math Festival occurred virtually this year from April 16 through April 18, and the SIAM Education Committee hosted a number of activities to encourage festival attendees to interact with applied mathematicians and learn about careers in applied math. Wesley Hamilton recaps the festivities and describes SIAM's "Meet a Mathematician" sessions and student-run booth. [Read more](#).

Getting to Know the Mexico Section of SIAM

The Mexico Section of SIAM (MexSIAM) serves as an international forum for applied mathematics in Mexico and provides a broad and inclusive channel for the exchange of information and ideas between professionals in the mathematical sciences. Gerardo Hernández-Dueñas, Jorge X. Velasco-Hernández, Irma García-Calvillo, and Daniel Olmos overview some of the section's recent activities. [Read more](#).

The SIAM Industry Committee: What We Do and How You Can Engage

The SIAM Industry Committee seeks to increase industry member participation within SIAM, improve SIAM services for these members, and provide education support related to industrial careers. John Abbott, Sharon Arroyo, Kevin Bongiovanni, Amr El-Bakry, and Lalitha Venkataramanan detail the committee's recent achievements, ongoing initiatives, and future plans. [Read more](#).

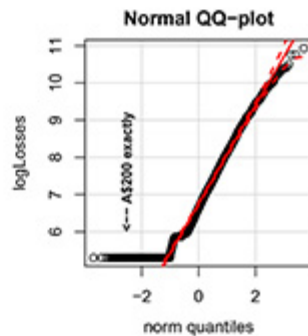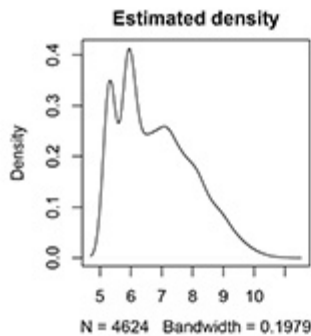## SIAM Members Elected to the U.S. National Academy of Sciences

In late April, the National Academy of Sciences (NAS) announced the election of 120 new members and 30 international members. Inductees are honored for their distinguished and continuing achievements in original research. SIAM offers its sincere congratulations to all inductees, including those SIAM members who were elected this year. Read more.

From the SIAM Bookshelf

An Exploration of Inliers

The second edition of *Mining Imperfect Data* focuses on the definitions, consequences, detection, and treatment of 10 forms of "imperfection" that commonly occur in real datasets. In addition to well-known data anomalies, these imperfections include more obscure issues like *inliers*. Author Ronald Pearson presents several examples of inliers. Read more.

Upcoming Conferences & Deadlines

SIAM Conference on Financial Mathematics and Engineering (FM21)
Happening virtually: June 1 – 4, 2021

Mexico Section of SIAM Annual Meeting (MEXSIAM2021)
Happening virtually: June 21 – 23, 2021

SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS21)
Happening virtually: June 21 – 24, 2021

SIAM Annual Meeting (AN21)
Happening virtually: July 19 – 23, 2021

SIAM Conference on Control and Its Applications (CT21)
Happening virtually: July 19 – 21, 2021

SIAM Conference on Applied and Computational Discrete Algorithms (ACDA21)
Happening virtually: July 19 – 21, 2021

SIAM Conference on Optimization (OP21)
Happening virtually: July 20 – 23, 2021

SIAM Conference on Discrete Mathematics (DM21)
Happening virtually: July 20 – 23, 2021

Some SIAM conferences are discussing ways to offer an alternative, either as a virtual meeting or a postponed event. Monitor the SIAM website for up-to-date plans.

More From SIAM News