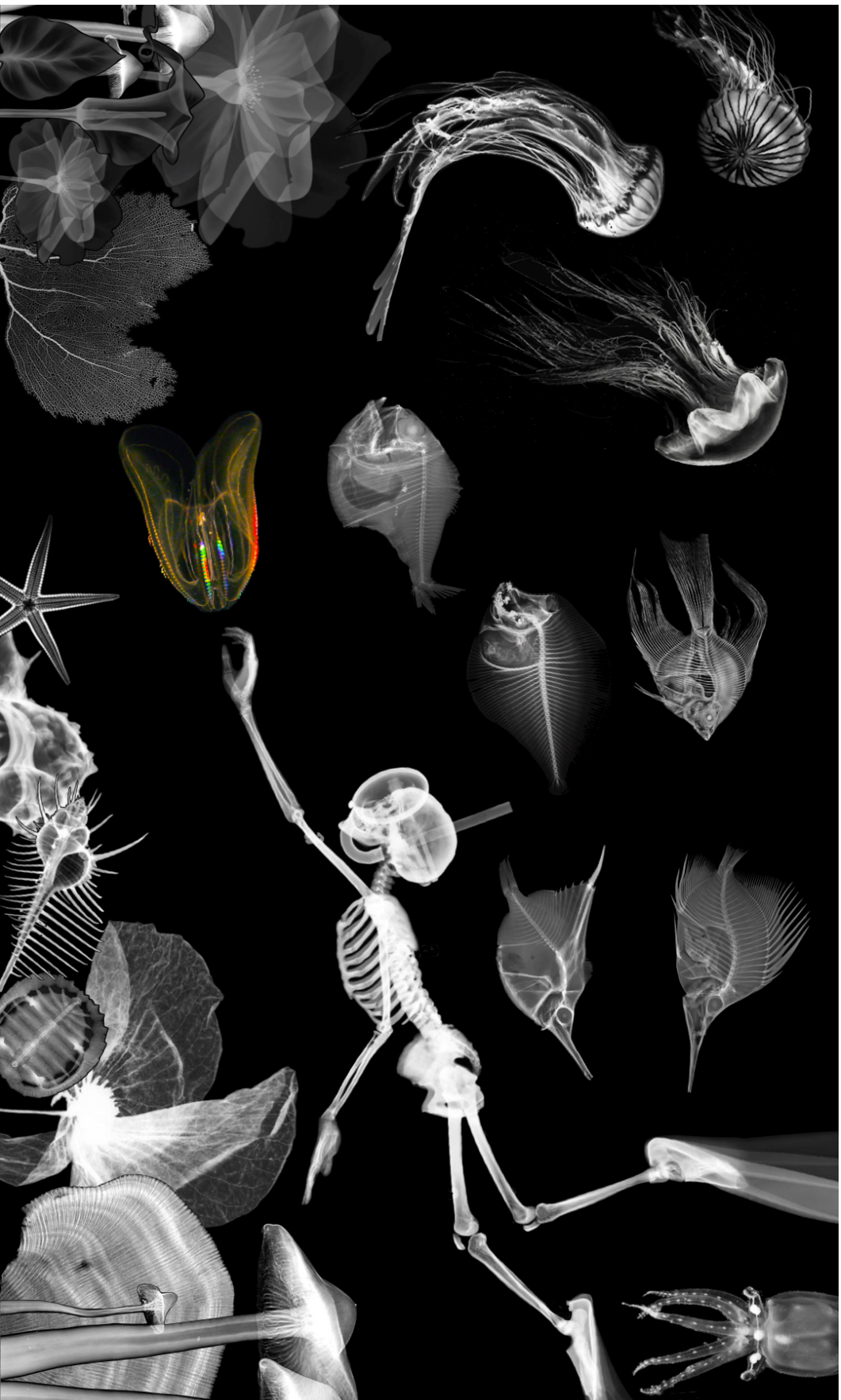
12th Annual BMEII Symposium

March 20-21, 2024



WINDOWS TO OUR BODY

Icahn School of Medicine at Mount Sinai

BioMedical Engineering and Imaging Institute

WINDOWS TO OUR BODY

Windows to Our Body features images created by imaging scientists and showcases how the state-of-the-art in medical imaging can not only peer into the body with unprecedented precision, but reveal dynamic and captivating patterns and symmetry in the process.

EHHOP

EAST HARLEM HEALTH OUTREACH PARTNERSHIP

Proceeds from tonight's auction will go directly to the East Harlem Health Outreach Partnership (EHHOP).

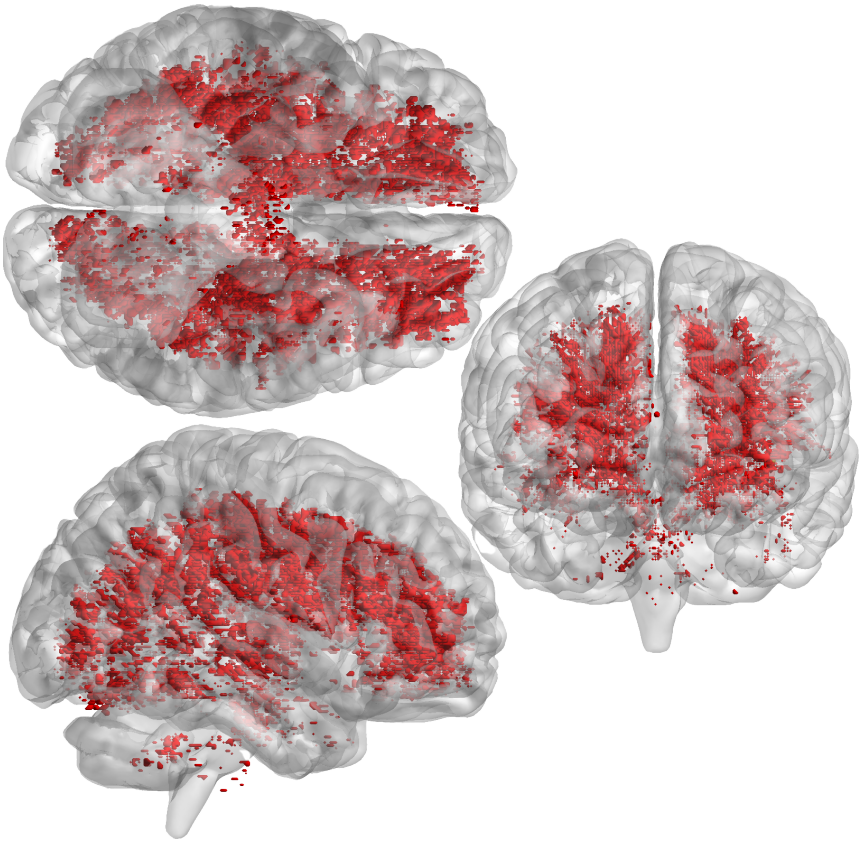
The East Harlem Health Outreach Partnership (EHHOP) is the Icahn School of Medicine at Mount Sinai's student-run, physician-supervised, free clinic. We provide care to uninsured adults in East Harlem, and our services are confidential and provided at no cost

Remarkable for its longitudinal, primary care model, the East Harlem Health Outreach Partnership offers a robust range of services. Since its founding in 2004, the clinic has grown substantially, serving more than 250 patients annually, with more than 1,000 visits across six medical specialties: OB/GYN; ophthalmology; physical medicine and rehabilitation/podiatry; liver/gastrointestinal; mental health; and cardiology.

In recognition of the lack of access to health care that affects so many, the mission at the East Harlem Health Outreach Partnership is to create a health outreach partnership with the local community. They provide quality health care, regardless of ability to pay or lack of health insurance.

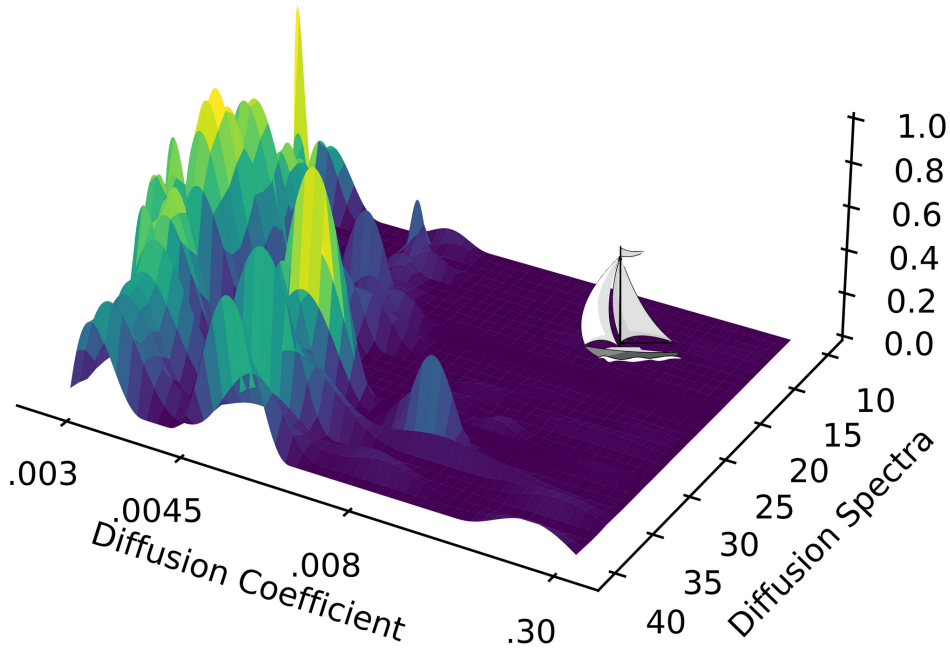
Thank you for your generosity in supporting this important cause.

https://icahn.mssm.edu/education/medical/clinical/ehhop



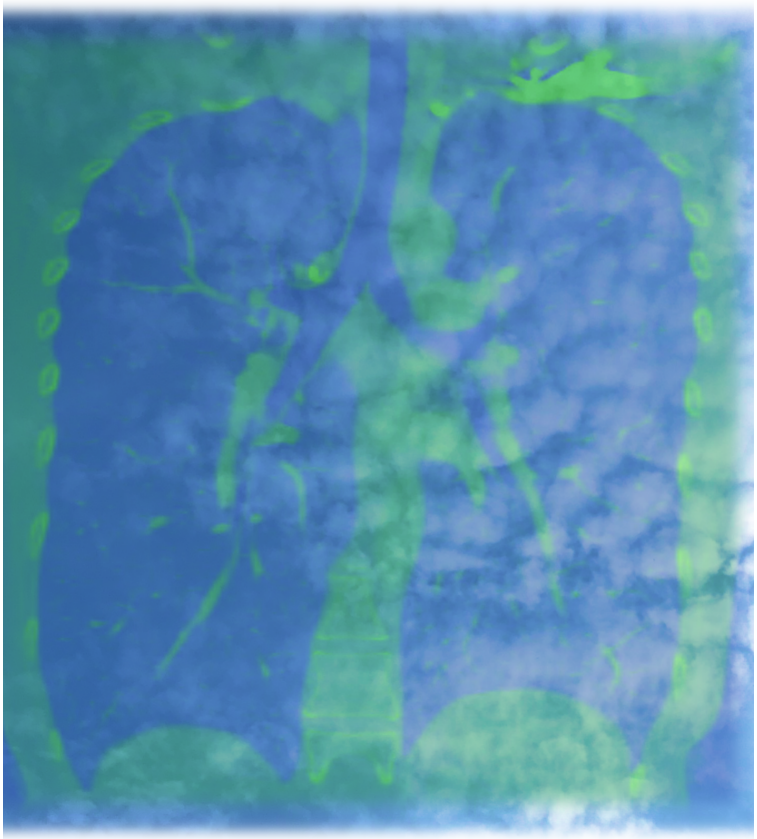
PVS Projections
Gaurav Verma, PhD

Three-dimensional projections of perivascular spaces in the white matter. These cerebrospinal fluid-filled spaces may be indicators of disrupted glymphatic clearance or neuroinflammation and correlated with neurological disorders. These spaces wire automatically segmented with the PVSSAS algorithm developed at Mount Sinai.



Diffusing Waves
Mira Liu, PhD

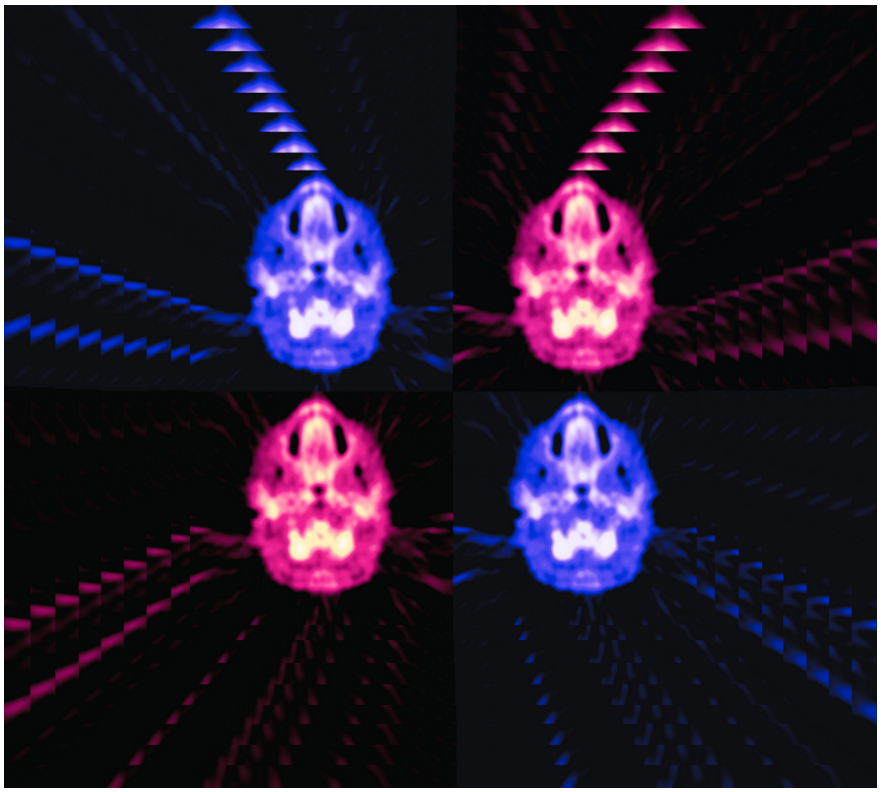
This is spectral analysis of multi b-value diffusion MRI signal of various ROIs in the brain plotted in 3D as a surface on a meshgrid. The appearance of the spectral curves as mountains or waves emerging from an ocean prompted placement of a small boat traveling to explore them.



Breath of Fresh Air

Audrey Kaufman, MD

This artwork was created by superimposing a contrast-enhanced dual energy CT of the thorax onto a personal photo of an August sky over Pittsburgh, PA (CT - Siemens SOMATOM Force CT, Siemens Healthineers, Forchheim, Germany. Photograph - iPhone X). A paracoronal reconstruction with an anterior-superior tilt was performed to enhance visualization of the trachea and lung fields. The CT color was adjusted through the CLUT - Dual Energy Atomic Number in syngo.via software (Siemens Healthineers, Forchheim, Germany). Microsoft PowerPoint was used to intensify the photo, adjust the transparency of the CT, and soften the edges of both images.

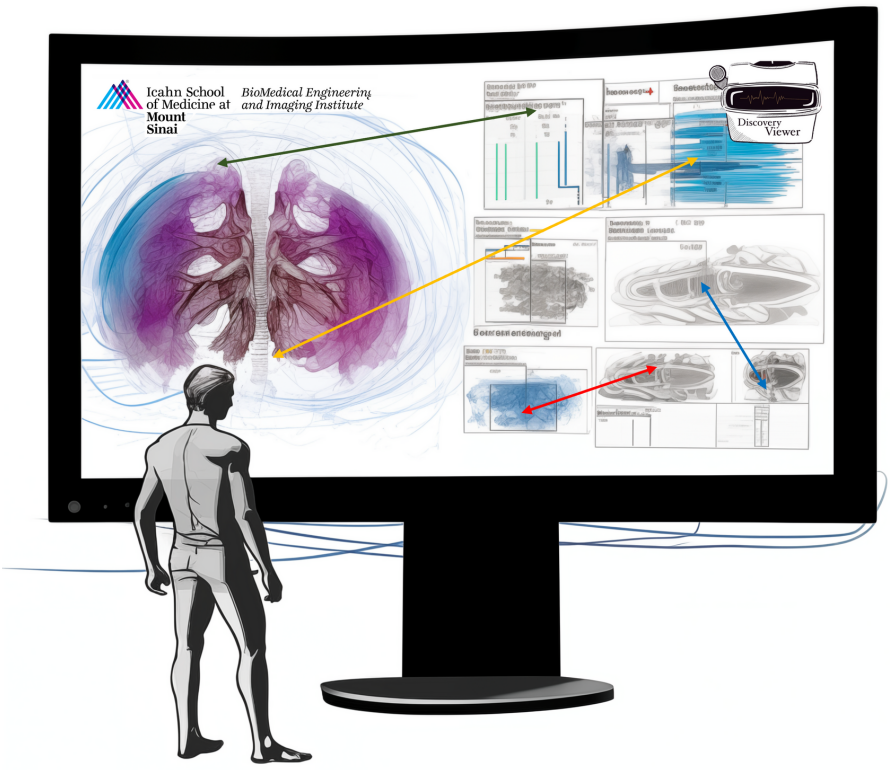


Connecting...
Heli Patel

Brain PET scan shown in the axial view with post-processing artifact created by using filtered backprojection (FBP) reconstruction. Image was duplicated, filtered, and repeatedly overlayed in Canva.

Discovery Viewer (DV)
Valentin Fauveau

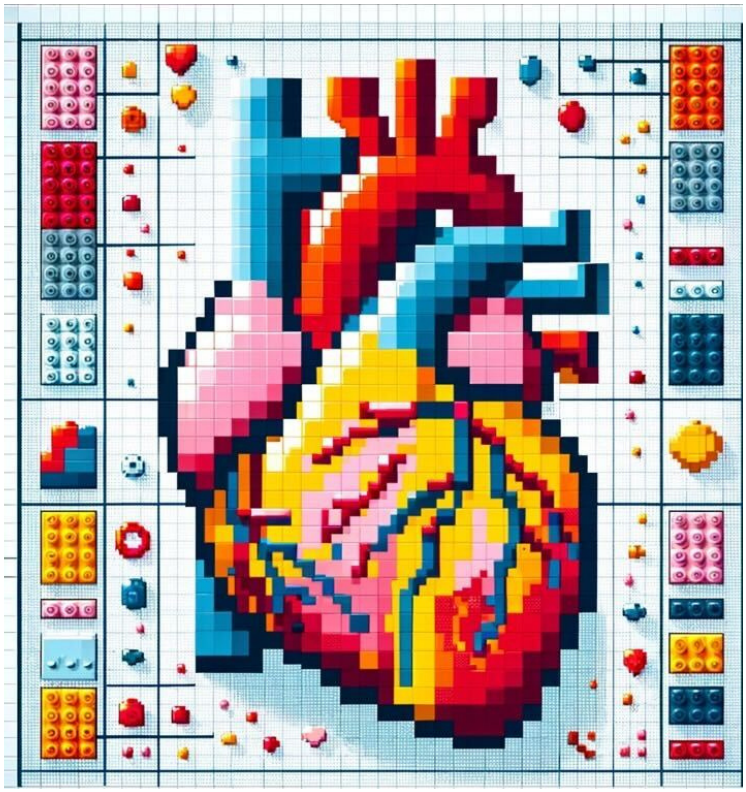
Built upon various medical viewers and AI models, DV establishes the foundation platform for the advancement of digital twins. The "discovery viewer" concept arises from the idea that users can not only look at a single set of medical data at a time, but also explore and link multiple medical viewers, enabling them to discover the entire universe of a patient's health.



Human Heart in Lego Style

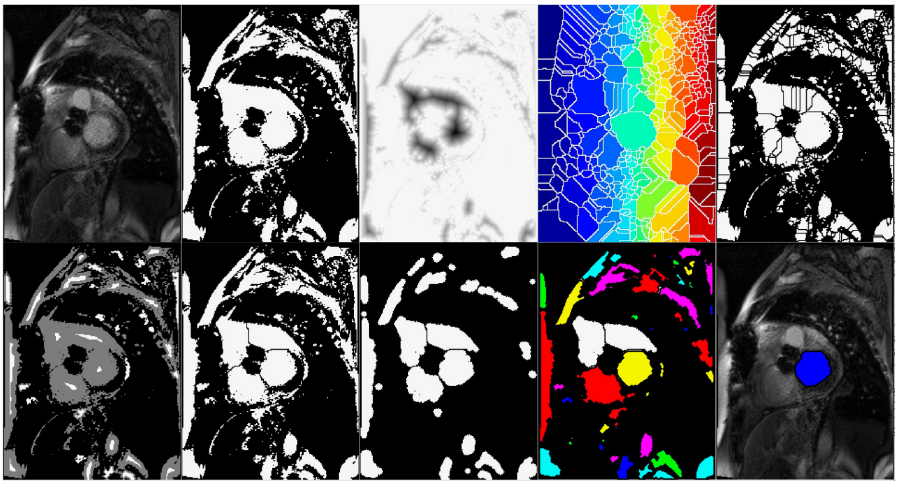
Xueyan Mei, PhD

2D pixel-art in lego style by DALLE .



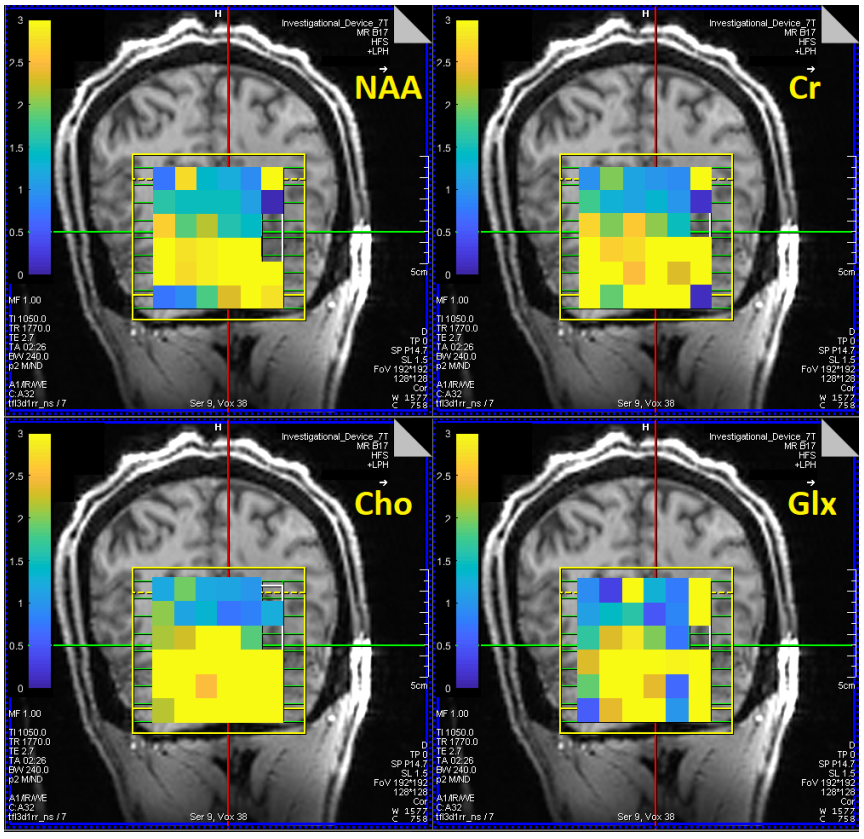
LV Segmentation
Swathi Pavuluri

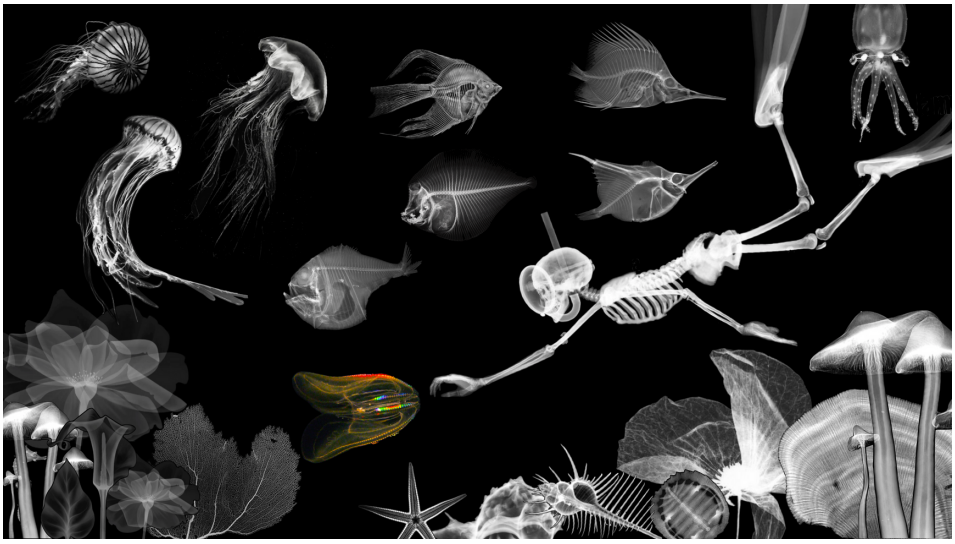
Auto-segmentation of the endocardium of the left ventricle from short-axis MR slices of a patient with sarcoidosis using Matlab image analysis.



Spectral Gains
Gaurav Verma, PhD

Maps of brain metabolites (N-acetylaspartate, Creatine, Choline, Glutamate+Glutamine) showing signal gain in the presence of an array of passive RF resonators designed to amplify signals near the skull base, where they typically drop out on ultrahigh field imaging.





Large Sensor Sea Life

Marco Pereañez, PhD

Large sensor scan of naturalistic scene collage.

A Kidney's Ascent

Mira Liu, PhD

A kidney in the style of MC Escher's piece 'Ascending and Descending', prompt input to Canva AI Design and then lightly edited.

MRI Brain Dreams

J. H. Miao and K. H. Miao, MD

Digital Painting of a MRI Brain.

MRI Dancing Knees

J. H. Miao and K. H. Miao, MD

Digital Painting of a MRI knee.

MRI Spinal Keyboard

J. H. Miao and K. H. Miao, MD

Digital Painting of a MRI Spine.

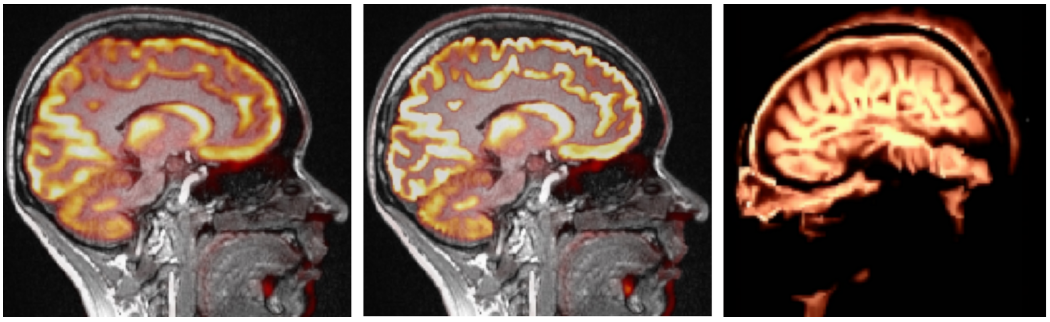
Palette of Perception

Teresa Lotz

This is AI generated and separately edited. It is inspired by the neurological processes that affect our understanding of art and beauty.

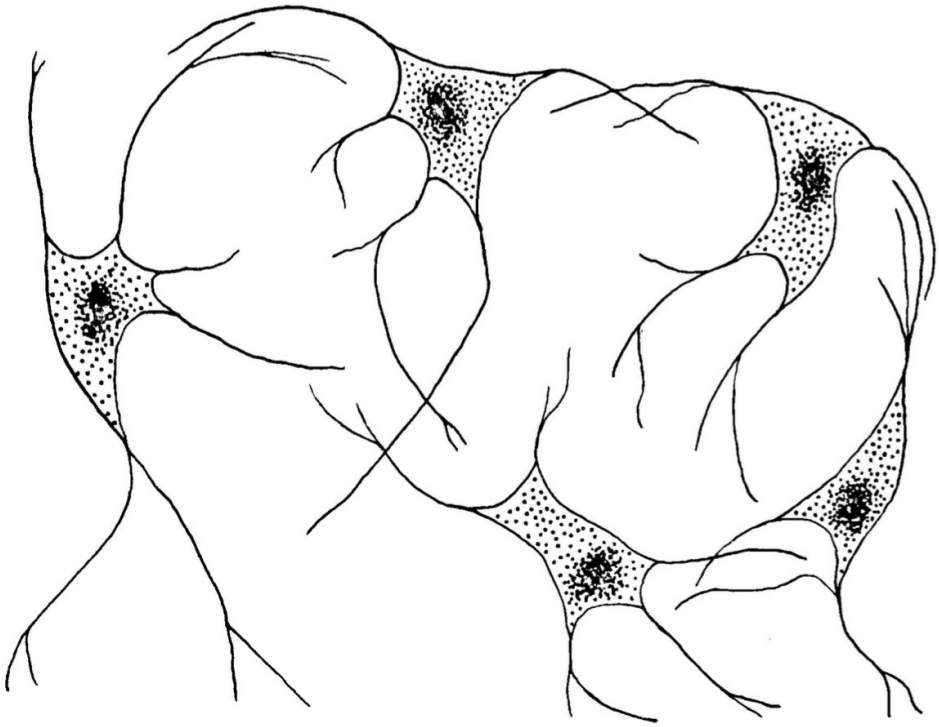
There is Still Room for Improvement
George Soultanidis, PhD

A test of how Midjourney would merge a brain PET and MRI image (right), compared with "pyapetnet," a dedicated CNN (center), denoises the 18F-FDG PET images (left).



The dance
Amelia Ryan

I was inspired by my favorite Matisse painting of the same name and the delicate dance that our neurons perform that allows us to experience life.



The BioMedical Engineering and Imaging Institute (BMEII) focuses on the use of multimodality imaging for brain, heart, and cancer research, along with research in nanomedicine for precision imaging and drug delivery, artificial intelligence, and wearable technology.

BMEIISINAI.ORG

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