

Generative AI has shown tremendous potential in transforming biomedical research and healthcare by offering new ways to analyze data, generate synthetic biological data, and predict patient outcomes. However, the successful application of these models also presents various challenges, such as data scarcity, model interpretability, ethical concerns, and the need for domain-specific solutions.

We invite researchers, practitioners, and professionals to submit their original research and review papers to the Special Track on *Generative Artificial Intelligence for Biomedical Applications* (GAI4BA). This track aims to explore the potential of generative models, such as GANs, and Diffusion Models, in the field of biomedicine, including their applications in diagnostics, drug discovery, medical imaging, and personalized medicine.

The special track will serve as a forum to discuss cutting-edge developments, share practical insights, and address the challenges faced by researchers and practitioners in applying generative AI to biomedical applications.

Topics include but are not limited to:

- **Generative AI in medical imaging:** Applications of AI models in image reconstruction, noise reduction, and segmentation of medical images.
- **Synthetic data generation for biomedical research:** Techniques for creating high-quality synthetic datasets to overcome data limitations.
- **GANs for drug discovery and molecular generation:** Leveraging generative models to explore chemical spaces and design novel compounds.
- **Diffusion models in biomedicine:** Applying diffusion-based generative models to model biological systems and processes.
- **Generative models for personalized medicine and patient-specific treatment:** Tailoring treatments to individual patients by generating patient-specific data.
- **AI-driven diagnostics and prognostics using generative models:** Enhancing diagnostic and predictive tools through generative model integration.
- **Integration of generative AI with bioinformatics and genomic data:** Combining generative models with large-scale biological datasets for new insights.
- **Model interpretability and transparency in biomedical applications:** Addressing the challenge of making generative AI models understandable and explainable in healthcare.
- **Ethical implications of generative AI in healthcare:** Discussing the ethical concerns raised using generative AI, such as data privacy and bias.
- **Handling imbalanced and scarce datasets with generative techniques:** Using generative methods to compensate for data imbalances in biomedical datasets.
- **Cross-modal generative AI models for combining multimodal biomedical data:** Fusing different types of biomedical data (e.g., images, signals, and text) using generative AI.
- **Applications of AI-generated data in clinical trials and healthcare decision-making:** Employing AI-generated synthetic data to improve clinical trial design and medical decision processes.
- **Case studies and real-world implementations of generative AI in biomedicine:** Showcasing practical examples of generative AI successfully applied in real-world biomedical problems.

We encourage submissions that demonstrate novel methods, share experimental results, and propose theoretical advances. Both academic and industry contributions are welcome. Submitted papers will undergo peer review, and accepted papers will be presented at the conference.

The special track will take place in parallel with the general conference track. Submission deadlines are as follows:

- Paper submission deadline: March 7, 2025
- Notification of acceptance: from April 20, 2025
- Camera-ready due: April 30, 2025
- Registration
 - Early registration deadline: May 15, 2025
 - Late registration deadline: June 8, 2025
- Conference: 18-20, 2025, Madrid, Spain

All submissions close at 11:59 pm Anywhere on Earth [AOE]