Artificial Intelligence (AI) technologies are widely used in computer applications to perform tasks such as monitoring, forecasting, recommending, predicting, and statistical reporting. They are deployed in a variety of systems, including driverless vehicles, robot-controlled warehouses, financial forecasting applications, and security enforcement and are increasingly integrated with cloud/fog/edge computing, big data analytics, robotics, Internet-of-Things (IoT), mobile computing, smart cities, smart homes, intelligent healthcare, and many more. Despite this dramatic progress, the quality assurance of existing AI application development processes is still far from satisfactory, and the demand for demonstrable levels of confidence in such systems is growing. Software testing is a fundamental, effective, and recognized quality assurance method which has shown its cost-effectiveness to ensure the reliability of many complex software systems. However, the adaptation of software testing to the peculiarities of AI applications remains largely unexplored and needs extensive research to be performed. On the other hand, the availability of AI technologies provides an exciting opportunity to improve existing software testing processes, and recent years have shown that machine learning, data mining, knowledge representation, constraint optimization, planning, scheduling, multi-agent systems, etc. have real potential to positively impact software testing. Recent years have seen a rapid growth of interest in testing AI applications as well as the application of AI techniques to software testing. This conference provides an international forum for researchers and practitioners to exchange novel research results, articulate the problems and challenges from practices, deepen our understanding of the subject area with new theories, methodologies, techniques, process models, impacts, etc., and improve the practices with new tools and resources.

**Topics of Interest:**

The conference invites papers of original research on AI testing and reports of the best practices in the industry as well as the challenges in practice and research. Topics of interest include (but are not limited to) the following:

- Testing AI applications
- Methodologies for testing, verification, and validation of AI applications
  - Process models for testing AI applications and quality assurance activities and procedures
  - Quality models of AI applications and quality attributes of AI applications, such as correctness, reliability, safety, security, accuracy, precision, comprehensibility, explainability, etc.
  - The whole lifecycle of AI applications, including analysis, design, development, deployment, operation, and evolution
  - Quality evaluation and validation of the datasets that are used for building the AI applications
- Techniques for testing AI applications
  - Test case design, test data generation, test prioritization, test reduction, etc.
  - Metrics and measurements of the adequacy of testing AI applications
- Testing of Large Language Models (LLMs)
- Test Oracle for checking the correctness of AI applications on test cases
• Tools and environment for automated and semi-automated software testing AI applications for various testing activities and management of testing resources
• Specific concerns of software testing with various specific types of AI technologies and AI applications
• Applications of AI techniques to software testing
• Machine learning applications to software testing, such as test case generation, test effectiveness prediction and optimization, test adequacy improvement, test cost reduction
• Constraint Programming for test case generation and test suite reduction
• Constraint Scheduling and Optimization for test case prioritization and test execution scheduling
• Crowdsourcing and swarm intelligence in software testing
• Genetic algorithms, search-based techniques, and heuristics to optimization of testing
• Data quality evaluation for AI applications
• Automatic data validation tools
• Quality assurance for unstructured training data
• Large-scale unstructured data quality certification
• Techniques for testing deep neural network learning, reinforcement learning and graph learning
• Testing of distributed AI applications and softwares
• Responsible AI testing

Important Dates:

• Early submission deadline: **March 8, 2024** (first-round review)
• Final submission deadline: **April 1, 2024** (second-round review)
• Author’s notification: **June 1, 2024**
• Final paper submission (camera-ready) and conference registration: **June 15, 2024**
• Conference dates: **July 15-18, 2024**

Paper Submission Tracks:

• **Regular papers (8 pages IEEE double column format) and short papers (4 pages IEEE double column format).** We welcome submissions of both regular research papers (limited to 8 pages) that describe original and significant work or reports on case studies and empirical research and short papers (limited to 4 pages) that describe late-breaking research results or work in progress with timely and innovative ideas. Both regular papers and short papers can have 2 extra pages subject to page charges.

• **AI Testing in Practice (8 pages IEEE double column format).** The AI Testing in Practice Track provides a forum for networking, exchanging ideas and innovative or experimental practices to address SE research that directly impacts on practice of software testing for AI.

• **Tool Demo Track (6 pages IEEE double column format).** The tool track provides a forum to present and demonstrate innovative tools and/or new benchmarking datasets in the context of software testing for AI.

Submission Guidelines:

All submissions must be the original work by the authors, not published or submitted to any other venues for consideration of publication. All papers must be written in English. Manuscripts must include a title, an abstract, and a list of 4-6 keywords. All papers must be prepared in the IEEE double-column proceedings format. For further information, please see: [https://www.ieee.org/conferences/publishing/templates.html](https://www.ieee.org/conferences/publishing/templates.html)
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All submitted papers will be peer-reviewed and use a single-blind review policy. Authors should report any conflict of interest with the list of PC members during submission of the manuscript, in which case the PC Chairs will exclude the corresponding PC member(s) from reviewing the paper. At least one of the authors of any accepted paper would have to register for the conference and confirm that she/he will present the paper in person.

Authors must submit their manuscripts via the following link by April 1, 2024, 23:59 AoE at the latest: https://easychair.org/conferences/?conf=ieeeaitest2024. For more information, please visit the conference website at: https://ieeeaitest.com

Paper Publication:
All accepted papers will be published by IEEE Computer Society Press (EI-Index) and included in the IEEE Digital Library. The best papers will be invited to submit an extended version (with at least 30% novel content) to the selected special issues (TBA).