2024 OkIP International Conference on Automated and Intelligent Systems (CAIS)

Tuesday, 1 October 2024 - Thursday, 3 October 2024

Tiako Center, Oklahoma City, OK, USA & Online

Scientific Tracks

AI, Machine Learning (ML), and Applications

General ML | Active/Supervised Learning
Clustering/Unsupervised Learning
Online Learning | Learning to rank
Reinforcement Learning | Deep Learning (DL)
Semi/Self Supervised Learning
Time Series Analysis | Prediction/Forecasting
DL Architectures/Generative-Models
Deep Reinforcement Learning
Computational Learning Theory
Bandit/Game/Statistical-Learning Theory
Optimization Methods and Techniques
Convex/Non-Convex Optimization
Matrix/Tensor Methods
Stochastic/Online Optimizations
Non-Smooth/Composite Optimization
Probabilistic Inference | Graphical Models
Bayesian/Monte-Carlo Methods
Trustworthy Machine Learning
ML Accountability/Causality
ML Fairness/Privacy/Robustness
Healthcare/DNA/Transportation
Digital-Economy | Ecommerce Security
Sustainability | Energy | Green Technology
Language | Image
Recommendation Systems

Agent-based, Automated, and Distributed Supports

Multi-Agent Systems | Software Agents
Dialogue System | Conversational Agent
Decentralized/Distributed Intelligence
Context-Aware Computing
Group Decision Support Systems
Intelligent Structures/Networks
Design/Automation Approaches
Sensor Networks Architectures
Complex Manufacturing Processes
Analytical Models | Path Planning
Multistage Assembly Line
Automated Inspection
Natural Language Processing

Natural Language Processing (NLP)

Conversational Agents | Dialogue System
Large Language Models | Grammatical Tagging
Natural Language Generation/Toolkit
Linguistic Morphology | Morphological Analysis

Morphemesx Characteristics
Language Models and Smoothing
Document/Topic Classification/Notation
Sequence Labeling |Speech Tagging
Named Entity Recognition
Lexical Semantics | Word Embeddings
Phrase Structure | Dependency Syntax
Sentence Semantics | Speech Recognition
Question Answering | Machine Translation
Document Summarization | Sentiment analysis
Co-Reference Resolution
Word sense disambiguation
NLP Tools/Approaches | Statistical NLP
AI/Machine/Deep Learning Techniques for NPL
Convolutional/Recurrent Neural Networks

Intelligent Systems and Applications

Medical Nanorobotics | Sensors | Actuators
Sensory/Embedded Systems
Embedded Systems | Digital Manufacturing
Optimization/Evolutionary Algorithms
Bioinformatics/Biotechnology Applications
Computer-Vision Applications
Sensor-Networks Applications
Intelligent Design | Fuzzy Systems
Soft/Ubiquitous/Pervasive Computing
Pervasive/Wearable Computing
Intelligence Manufacturing | Microsatellite
Cyber-physical Systems | Kinematics
AI in Nuclear-Energy/Earth-observation
Signal/Audio/Video Processing
Context-Awareness | Internet of Things
Human-Computer Interactions

Knowledge-based and Control Supports

Expert/Complex Systems
Decision-Support Systems
Intelligent Control/Supervision Systems
Knowledge Engineering
Neural Networks | Structural Optimization
Intelligent Teleoperation
Intelligent Shopfloor
Collision Avoidance | Fault Diagnosis
Object Detection and Tracking | Path Planning
Position/Quality/Motion Control
Predictive Control
Preventive Maintenance | Defect Detection

Automation, Robotics and Vehicles

Unmanned Vehicles/Robots
Autonomous Vehicles/Robots
Human-Robot Interfaces/Interactions
Intelligent Telerobotics | Service Robots
Robotic Manipulators/Arms/Applications
Computer Vision
Industrial/Agricultural Robotics
Self-Driving Vehicles | Cloud-based Driving
Vehicular ad hoc Networks |Traffic Detection
Vehicle-to-Vehicle Communication
Vehicle Platooning | Steering Systems
Vehicle dynamics | Traffic Computing
AI in Manufacturing Automation
Lights-out Manufacturing
New Concepts/Products Rapid Scaling
Business Process Automation | IT Automation
Network Automation | Industrial Automation
Automating Integration between Systems
Fixed Automation | Programmable Automation
Flexible Automation | Integrated Automation

Glogal AI

Sustainable AI
AI Solutions to Global Problems
Socially Intelligent Robots
Crowdsourcing AI Solutions
Machine Vision and Safety
AI Technological Progress
AI Societal Accountability
Conservation and Biodiversity
Human Development Tracking
Neurotechnologies, AI and Human Rights
AI Risks/Benefits | AI and Financial Inclusion
AI and Environmental Efficiency
Artistic/Hybrid Intelligence
AI for Diversity/Inclusion/Equity/Equality
AI in Weather/Climate
Addressing the Dark Sides of AI
AI for Future Communities

Generative AI Tools and Models

Generative AI Tools/Models/Applications
Legal and technical challenges
Empathy and Ethical Creativity
Explainability/Robustness/Trustworthy AI
AI-Powered Decision Making Tools
Responsible/Fair/Unbiased/Auditable AI
Data Modality/Type
Unimodal/Multimodal Systems

Generative AI Software/Hardware
Chatbot|Text-to-image | Text-to-video
Smaller/Larger/Language Models
Advanced Computing | Semiconductors
GPU | AI Accelerator Chips
Government/Business/Individuals Concerns
Job Losses | Deepfakes | Cybercrime
Misuse in Journalism | Regulations

AI in Computing and Society

AI/Cognition in Cloud Computing
AI in Software Engineering
AI in Data and Big Data
Theories and Approaches of Blockchain
AI in Electronic Commerce
AI in Education
Intelligent Learning/Tutoring/Teaching
Collaborative Knowledge Building Activities
AI in the Healthcare System
AI in High-Performance Computing
AI in CyberSecurity
IA in Power/Energy
AI and Knowledge Management Process
AI, Web-Based Environments, and Adaptive Systems
Smart Systems/Infrastructures/Construction/City
Grid Modernization | Efficient Wind Turbines
Digital Communication and Control
Evolution/Integration of Renewable Energy
Smart Grids/Microgrids/Meters/Appliances
Internet of Things (IoT) and Sustainability
Intelligent Transportation Systems

AI in Education

AI-assisted Educational Methods/Tools/Technologies
Interactive Pedagogical Technologies/Agents
Educational Data-Mining/Knowledge-Representation
Virtual/Augmented Reality in Education
Intelligent Teaching/Learning Models
Problem-Solving Methods/Processes
Collaborative/Community/Group Learning
Computational Thinking and Model-building
Learning Motivation/Engagement and Feedbacks
Learning Engagement/Companions Tools
Teaching Agent Support
Explainable Teaching/Learning/Tutoring Models
Learning Contexts and Informal Learning
Game-based learning; Collaborative and group learning;
Ubiquitous Learning Environments
Lifelong/Professional/Informal Learning
Evaluation Methods/Techniques/Tools

Equity and Inclusion in Education
Ethics and AI in Education
AI in k-12 Education
Synchronous/Asynchronous/Mobile Learning
Virtual-Active/Video-Based/Mixed-Reality Learning

AI Engineering

Data Acquisition/Sensing/Migration/Integration
Data Verification/Validation
Data Sharing/Representation/Conversion
Data Privacy/Integrity/Security/Corruption
Data Dependence Quality/Restauration
Data Coverage/Analysis/Constraints
Data Structure/Prediction/Change/Evolution
Data Sensitivity Modelling
Human-centered AI
Operational Environment/Condition/Situation
System Limitation/Self-Awareness
Human-Needs Translation
Competency-aware Systems
Introspection Assessment/Implementation
Generic Introspection Modeling
Environment Construction/Reconstruction/Evaluation
System Risk/Vulnerability/MultiTasking
Adversarial Aspects/Explainability
System Accuracy/Robustness
System Evaluation/Predictability
AI System Design
Deep Human Understanding
Human Behavior/Value Understanding/Interpretation
Develop/Share/Reuse AI Infrastructure/Model/Data

Software Engineering for AI

Data Management/Observability Tools
Data Ingestion/Cleansing/Protection
Data Monitoring/Verification/Validation
Data Evolution/Change/Pileline Management
Data Change and Malicious Data Injection
Training Data and Problem Correlation
Components/Data/Models Uncertainty Support
Components/Data/Models Evolution/Change Management
Systems/Components Verification/Validation
Systems/Components Robustness/Security
Problem Requirement Elicitations
Team Formation/Qualification/Background
Data Engineering Approaches
Model Building/Customization/Selection/Refinement,
Hardware Infrastructure Selection
Software Architecting Expertise
Innovative Software Engineering Expertise

Model building/Customization/Evolution/Change
Algorithm Selection/Evolution/Change Management
System Evolution and Environmental Change
System Intrusion/Attacks Detection/Prevention
Security Challenges | User Experience Consideration
System Evaluation/Verification/Validation
System Performance/Scalability
Bandwidth/Resource/Expertise/Time Management
Variant/Version/Bias Management
Output Assurance/Interpretation
Continuous Monitoring and Instrumentation
Component Development/Coupling/Extensibility/Scalability
Ethical/Gender/Equity/Bias/Policy/Accessibility Concern

Circuit, Design and Hardware for AI

Circuit and Design
Hardware-Software Co-design
Electronic System Design/Implementation/Demonstration
Circuit and System Innovations
Theories and Artificial Intelligence in Circuits/Systems
Emerging Printed Circuit Boards
Smart Tool/Platform/Infrastructure
Advanced Neural Network Design
Neuromorphic Computing/Chip
High-Performance/Cloud Computing
Intelligent Hardware Design Systems
Leakage Reduction Techniques
Hardware acceleration Techniques
Mathematical foundations
Theories on Linear Circuits and Systems
Complex Variables | Linear Equations and Matrices
Convolution | Filter Designs | Laplace and Fourier transformations
Emerging Design Automation
Circuit Design and Layout Rules
Circuits Formal Verification/Validation
Reconfigurable Design | Circuit Theory
Ambient/Miniaturization Intelligence

AI in Healthcare/Bioinformatics/Biotechnology

AI in Healthcare/Bioinformatics/Biotechnology
Decision Support Systems
Medical Data Mining Analysis
Health Expert Systems | eHealth Blockchain
Health Knowledge Management
Cognitive Informatics | Affective Computing
Physiological and Behavioral Modeling
Pattern Recognition and Machine Learning
Clinical Decision Support Systems
Games for Health | Motion Gaming
Health Promotion AI | Exergaming

Healthcare Predictive Modeling
Smart, Personalized Healthcare Guidance
AI Learning-Recommendations
Healthcare Explainable AI
Classification Algorithms
Healthcare Advisor Model
Big Data in Healthcare and Biomedical
Big Data in Bioinformatics and Biotechnology
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