ISARC2020 Online Topics

(A) Information Modeling and Management

(A-1) Modeling
- Building information modeling
- 4D/nD modeling
- Energy modelling & monitoring
- Modeling the physics of soil, buildings and infrastructure

(A-2) Management
- Construction management system
- Managing IT strategies
- Data, information and knowledge management
- Model Based Management Tools and Systems
- Project information management system
- Failure analysis and management

(A-3) IT supported system, Database, Big data
- IT supported architectural and engineering design
- Connectivity and storage (internet-of-things, cloud platform)
- Design and decision support systems
- 3D geographic information systems
- Project planning/simulation
- Calculation technology for conceptual design
- AI

(A-4) Others

(B) Automation and Robotics

(B-1) Automation
- Automated approaches in construction
- Automation and control
- System integration (mobile manipulator, humanoid, RT middleware, new robotic systems)
- Intelligent transportation system

(B-2) Robot, Mechanism, Control
- New actuators/mechanisms/machines
- Control theory/system
- Autonomous
- Manipulation (end-effector, work modeling)
- Mobile robot (mobile mechanism, navigation, vehicle motion planning, operation management)
- Environment structuring, networking, map generation

(B-3) Human-machine interface
- Human-machine interaction/interface (operation device, display technology, VR)
- Human robot collaboration
- Powered exoskeleton
- Operator support system

(B-4) Others
(C) Data Sensing, Computing, and Visualization

(C-1) Data Sensing
- Data acquisition (handhelds, laser scanning, photo-/videogrammetry, unmanned aerial vehicles, drones, autonomous vehicles, underwater ROVs, surface autonomous vehicles)
- Remote sensing
- Environment sensing and monitoring
- Sensing/recognition (sensor, vision, voice recognition, SLAM)
- Computer vision

(C-2) Simulation and analysis
- Data analysis (algorithms)
- Simulation in construction
- Situation awareness and sensing technologies

(C-3) Computing
- Communication and collaboration technologies
- Process control and optimization
- Advanced calculation technology/computational mechanics
- Distributed computing

(C-4) Learning/AI/Recognition
- Machine Learning
- Artificial/computational intelligence
- Collaborative learning platforms
- Visual pattern recognition technologies

(C-5) Human-computer interaction
- Augmented/Mixed/Virtual Reality (AR, MR, VR)
- Autonomous agents in virtual and augmented environments
- Collaborative visual and augmented environments
- Interactive media environments
- Human-computer interaction in virtual environments
- Game engines and serious game applications
- Visualization and simulation techniques
- Mobile and wearable computing

(C-6) Others

(D) Education
- Education in construction automation and informatics
- Knowledge transfer, technology dissemination, and standardization
- Research methods in construction informatics

(E) Human Resources and Environment
- People, culture, and change
- Risk management
- Safety, quality, and the environment

(F) Lean, Logistics, Prefabrication, and Modularization

(F-1) Product management
- Product lifecycle management
- Supply chain management
- Product development & design management
(F-2) Product/process design
- Product/process modeling and control
- Knowledge modeling and linked data
- Integrated process and product design
- Production system design
- Prefabrication and assembly
- Modularization
- Smart structure
- Constructability

(F-3) Lean
- Enabling lean with IT
- Lean theory
- Teaching lean
- Contract and cost management
- Sustainability and lean

(F-4) Others

(G) New application fields of construction robots and machines

(G-1) Inspection and maintenance
- Inspection diagnosis (infrastructure inspection, monitoring of structure, sensor network)
- Maintenance management (maintenance, cleaning, operation, service)
- Facility maintenance operation management

(G-2) Production/Processing system
- Renewal/dismantling/processing (repair, refurbishment, dismantling automation, waste processing, recycling)
- Environmental conservation (global warming response, energy saving)
- Hazardous material treatment
- Integrated production system for building, tunnel, dam, ocean, creation, road, underground/foundation

(G-3) New fields
- Disaster response (investigation/exploration technology, disaster restoration technology, earthquake resistance and liquefaction countermeasures)
- Space technology (exploration, control of rover, base construction, space elevator, etc.)
- Surface, underwater and deep sea (survey, exploration, underwater work, resource mining)

(G-4) Others

(H) Future construction production
- Integrated IT throughout the life-cycle of the design, construction and occupancy of buildings and related facilities
- Lowering cost technology (power saving, labor saving, construction optimization)
- Technology for shortening construction period
- Prospects for future construction production
- Status of construction robot development
- Problems of planning and management over robotization

(I) Others
This list of topics is not meant to be exhaustive and we would certainly welcome papers in topics related to those above, but not explicitly stated.