Session organiser (Affiliation): Masanao NATSUMEDA (NEC Corporation)

Session title: Autonomous decision making under complex conditions or situations

Theme and objective:

 Growth of computing power, advance in sensing technologies, and artificial intelligence technology are driving introduction of autonomous systems in our society. Chatbots are implemented in various IT services, and they respond to customers by themselves. Autonomous vehicles operate on public road in certain area.

 Decision making at industrial systems and IT systems is heavily rely on humans. It varies from straightforward level to highly complicated level. In particular, decision making in PHM are complex and mission critical since they affect not only efficiency of systems but also their safety. Due to rapid change in technologies and customers' needs, the systems are required quick adaption to them. This poses a challenge to keeping use of conventional methods.

 Therefore, it is critically important to realize autonomous systems for higher level of decision making in PHM. In this session, we bring ideas and lessons learned from not only PHM but also other fields so that we can exchange our thoughts from various aspects.

The topics may include but not limited to:
- Autonomous system design
- Autonomous operation
- Autonomous restoration
- Digital twin
- Robotics for PHM
- Foundation of autonomous PHM systems, i.e., root cause analysis or diagnosis, rule-based approach, knowledge engineering.

Field: Multidisciplinary

Tentative list of presenters (4 presenters per block):

- Professor Akio GOFUKU
- Professor Takehiro ITO
- Dr. Takayuki KURODA
- Mr. Shumpei KUBOSAWA
- Mr. Yasutomo OTAKE